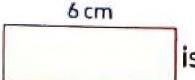
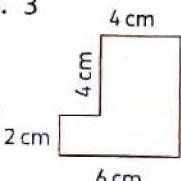


# Revision 1

## 1. Complete.

- a.  $32,621 + 18,709 = \underline{\hspace{2cm}}$
- b. 30 thousands =  $\underline{\hspace{2cm}}$  hundreds.
- c. The perimeter of the rectangle  $2\text{ cm}$   is  $\underline{\hspace{2cm}}$  cm.
- d. The place value of the digit 4 in the number 46,385 is  $\underline{\hspace{2cm}}$ .
- e. Thirty-eight thousand, five hundred two in standard form is  $\underline{\hspace{2cm}}$

## 2. Choose the correct answer.

- a.  $35 \div 7 = \underline{\hspace{2cm}}$
- A. 5      B. 6      C. 7      D. 8
- b.  $3,000 + 829 = \underline{\hspace{2cm}}$
- A. 3,829      B. 8,293      C. 30,829      D. 3,928
- c.  $8 \times \underline{\hspace{2cm}} = [8 \times 5] + [8 \times 2]$
- A. 10      B. 3      C. 8      D. 7
- d. The area of the shape  is  $\underline{\hspace{2cm}}$  square cm.
- A. 30      B. 28      C. 24      D. 20
- e. The greatest number formed from 7, 2, 0, 6, 8, 1 is  $\underline{\hspace{2cm}}$
- A. 870,621      B. 876,210      C. 102,678      D. 780,621

## 3. Arrange the following numbers from least to greatest.

56,210 , 506,021 , 650,201 , 171,000 , 43,692

The order is:  $\underline{\hspace{2cm}}, \underline{\hspace{2cm}}, \underline{\hspace{2cm}}, \underline{\hspace{2cm}}, \underline{\hspace{2cm}}$

## 4. Find.

a. 
$$\begin{array}{r} 7,263 \\ - 4,081 \\ \hline \end{array}$$

b. 
$$\begin{array}{r} 43,826 \\ + 25,095 \\ \hline \end{array}$$

c.  $9 \times 3,000 = \underline{\hspace{2cm}}$

d.  $7 \times 7 = \underline{\hspace{2cm}}$

# Revision 2

1. Put (<, > or =).

a.  $23,629$  —————  $23,692$

c.  $700,000 + 30,000 + 10$  —————  $73,100$

e.  $99,999$  ————— nine hundred thousand

b.  $8 \times 0$  —————  $8 + 0$

d.  $3 \times 4$  —————  $72 \div 9$

2. Complete.

a. If  $3 \times 6 = 18$ , then  $18 \div$  \_\_\_\_\_ = 3

b. 19,380 in expended form is \_\_\_\_\_

c. The value of 0 in the number 708,362 is \_\_\_\_\_

d. The area of a rectangle is 36 square cm and its length is 9 cm, then its width = \_\_\_\_\_ cm.

e. The place value of 9 in 396,482 is \_\_\_\_\_

3. Arrange the following numbers from greatest to least.

86,006 , 80,600 , 723,014 , 210,370 , 732,140

The order is: \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

4. Hany saved 70,550 pounds in a year. In the next year he saved 84,980 pounds.

How much did he save in the two years ?

5. Match.

1cm

1m

100 mm

11cm

10 cm

10 mm

110 mm

100 cm

# Revision 3

## 1. Choose the correct answer.

a.  $54,275 - 32,938 = \underline{\hspace{2cm}}$

A. 12,337

B. 21,373

C. 21,733

D. 21,337

b.  $501,326 < \underline{\hspace{2cm}}$

A. 510,200

B. 501,236

C. 51,623

D. 56,632

c.  $3 \times 80 = \underline{\hspace{2cm}}$

A. 24

B. 240

C. 2,400

D. 24,000

d.  $\frac{1}{7}$  of 28 =  $\underline{\hspace{2cm}}$

A.  $\frac{1}{8}$  of 32

B.  $\frac{1}{5}$  of 30

C.  $\frac{1}{6}$  of 48

D.  $\frac{1}{9}$  of 18

e. The perimeter of the square  is  $\underline{\hspace{2cm}}$  cm.

A. 20

B. 25

C. 10

D. 30

## 2. Complete.

a. Eight hundred sixty-three thousands, five hundred seven in standard form is  $\underline{\hspace{2cm}}$

b. The place value of the digit 7 in 762,435 is  $\underline{\hspace{2cm}}$

c.  $7 \times \underline{\hspace{2cm}} = 63$

d.  $\underline{\hspace{2cm}} = 100,000 + 7,000 + 30 + 5$

e.  $\underline{\hspace{2cm}} \text{ tens} = 170$

3. A factory produces 800 cans of soft drink every day.

How many cans the factory produces in a week ?



4. Write the greatest number and smallest number can be formed

from 9, 4, 0, 3, 1, 6.

- The greatest number:  $\underline{\hspace{2cm}}$

- The smallest number:  $\underline{\hspace{2cm}}$

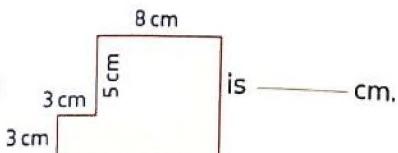
# Revision 4

**1. Complete.**

a.  $\underline{\hspace{2cm}} \div 4 = 8$

b.  $[5 \times 6] \times 7 = \underline{\hspace{2cm}}$

c. The perimeter of the shape



is  $\underline{\hspace{2cm}}$  cm.

d.  $8,762 - 7,648 = \underline{\hspace{2cm}}$

e. The smallest number formed from 2, 7, 0, 6, 5 is  $\underline{\hspace{2cm}}$

**2. Choose the correct answer.**

a. The value of the digit 3 in 721,362 is  $\underline{\hspace{2cm}}$

- A. 30,000      B. 3,000      C. 300      D. 30

b. The area of the rectangle whose length is 10 cm and width is 7 cm is  $\underline{\hspace{2cm}}$  square cm.

- A. 17      B. 34      C. 70      D. 44

c.  $\underline{\hspace{2cm}} = 1,000 + 900 + 70 + 2$

- A. 19,472      B. 1,927      C. 10,972      D. 1,972

d.  $61,072 + 9,838 = \underline{\hspace{2cm}}$

- A. 7,910      B. 70,910      C. 79,010      D. 70,091

e.  $6 + 6 + 6 + 6 + 6 = 6 \times \underline{\hspace{2cm}}$

- A. 6      B. 5      C. 7      D. 8

**3. Arrange the following from least to greatest.**

$5 \times 12$  ,  $7 \times 8$  ,  $3 \times 10$  ,  $6 \times 9$  ,  $8 \times 7$

The order is:  $\underline{\hspace{2cm}}$  ,  $\underline{\hspace{2cm}}$  ,  $\underline{\hspace{2cm}}$  ,  $\underline{\hspace{2cm}}$  ,  $\underline{\hspace{2cm}}$

**4. Bassem has 72 marbles. he wants to put each 8 marbles in a bag.**

How many bags does Bassem need?

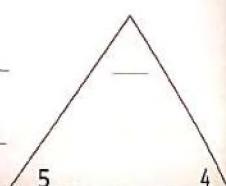
**5. Find the product. Write the fact family.**

•  $\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

•  $\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

•  $\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

•  $\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$



# Place Value

» Concept 1 : Reinforcing Place Value

» Concept 2 : Using Place Value



## Fast Fact

The distance from  
the Earth to the  
Moon is about:  
**384,402 Km.**  
which equals  
**384,402,000 m.**





## Concept Overview

### In concept 1:

Reinforcing Place Value, students investigate relationships between places in a place value chart, specifically how much a digit changes in value as it moves to the left within a whole number. Students review composing and decomposing numbers and apply their understanding to reading and writing numbers to the One Milliard place. These place value concepts help students master more challenging concepts in primary 4, including multiplication, division, fractions and decimals.

Lesson No.	Lesson Name	Vocabulary Terms	Learning Objectives
Lesson 1	1-1 Review Digit, Numeral, Number	Digit - Numeral - Number	<ul style="list-style-type: none"><li>Students will explain the difference between a digit, numeral, and number.</li><li>Students will discuss how the value of a digit can change.</li></ul>
Lesson 2	1-2 Really Big Numbers	Digit - Million - Milliard - Period - Place value	<ul style="list-style-type: none"><li>Students will identify all whole number place values through the One Milliard place.</li><li>Students will explain how the value of a digit changes based on its place in a number.</li></ul>
	1-3 Changing Values	Milliard - Period - Place value	<ul style="list-style-type: none"><li>Students will explain how the value of a digit changes as it moves to the left in a whole number.</li><li>Students will describe patterns they observe in changing place values.</li></ul>
	1-4 Review Comparing Values		<ul style="list-style-type: none"><li>Students will explain the relationship between a given place value and the place value to its left.</li><li>Students will use multiplication to compare place values.</li></ul>
Lesson 3	1-5 Many Ways to Write	Expanded form - Standard form - Word form	<ul style="list-style-type: none"><li>Students will write numerals in standard, word, and expanded forms.</li></ul>
	1-6 Composing and Decomposing	Compose - Decompose - Decomposed form - Expanded form - Standard form - Word form	<ul style="list-style-type: none"><li>Students will compose and decompose numerals in multiple forms.</li></ul>

# 1-1 Review Digit, Numeral, Number

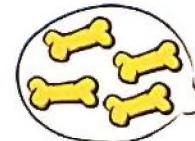
## Learn

### Number

A **number** is a count or measurement that is really an **idea** in our minds.

We write or talk about numbers using **numerals** such as "4" or "four".

But we could also hold up 4 fingers, or tap the ground 4 times.



These are all different ways of referring to the same number.

### Numeral

A **numeral** is a **symbol** or **name** that stands for a number.

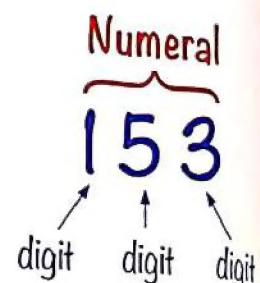
Examples : 3, 49 and twelve are all numerals.

So, the number is an idea, the numeral is how we write it.

### Digit

A **digit** is a **single symbol** used to make numerals.

0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are the ten digits we use in everyday numerals.



Examples :

- The numeral 153 is made up of 3 digits ("1", "5" and "3").
- The numeral 46 is made up of 2 digits ("4" and "6").
- The numeral 9 is made up of 1 digit ("9").

So a single digit can also be a numeral.

### Notes for parents :

- Students often use the term **number** when referring to numerals. Since this is a common error we understand each other. However, the term **digit** is distinct.

So, digits make up numerals, and numerals stand for an idea of a number.



Just like letters make up words, and words stand for an idea of the thing.



### Number Instead of Numeral

Often people say "Number" when they really should say "Numeral"... it doesn't really matter is you do that, because other people understand you. But try to use "digit" only when talking about the single symbols that make up numerals.

### Other Types of Digits and Numerals

Different languages use different digits and number systems to create numerals.

For example :

Hindu-Arabic	0	1	2	3	4	5	6	7	8	9
Eastern Arabic	٠	١	٢	٣	٤	٥	٦	٧	٨	٩
Chinese	〇	一	二	三	四	五	六	七	八	九
Roman		I	II	III	IV	V	VI	VII	VIII	IX
Ancient Greek		α'	β'	γ'	δ'	ε'	ζ'	η'	θ'	

- Ask your child to explain the difference between a digit, a numeral and a number.

**Example 1**

Write each number in the appropriate column. Some may go in more than one column.

twenty-five

235

8

seven

0

one hundred

240,305

Digit	Number	Numerals

**Solution** [💡]

Digit	Number	Numerals
5	235	twenty-five
3	8	235
0	0	8
	240,305	seven
		0
		one hundred
		240,305

**Check your understanding**

Circle all the numerals below.

15

nine

XXXXX

sixty-eight

subtraction

503

20 cats

7

thirty

addition

0

2,301,058

**Notes for parents :**

- Ask your child to write more examples for numbers, numerals and digits.

## Remember Place value

The value of a digit can change in different numbers and numerals according to its place.

For example :

The value of 5 in the numeral 15 is very different than its value in the numeral 5,836

- The value of 5 in 15 is 5 [It is in Ones place]
- The value of 5 in 5,836 is 5,000 [It is in Thousands place]

### Example 2

Write the value of the digit 8 in each of the following numerals :

- a. 582                      b. 8,301                      c. 30,857                      d. 89,004

### Solution

- a. 80                      b. 8,000                      c. 800                      d. 80,000

### Check your understanding

Write the place value and the value of the colored digit.

Place value

Value

634



29,510



4,182



471,206



8,200



- Let your child remember that the position of a digit in a numeral determines its value.

**Remember****Comparing numbers**

You can use place value to compare numbers. For example:

Compare : 2,349 and 2,617.

**Step 1**

Begin at the left. Compare.

**2,349**      } Both numbers have  
**2,617**      } 2 thousands.

So, **2,349 < 2,617**

**Step 2**

Find the first place where the digits are different. Compare.

**2,349**      } 3 hundreds is less  
**2,617**      } than 6 hundreds.

or      **2,617 > 2,349**

**Remember**  
When comparing numbers, the number which has more number of digits is the greater.  
**5843 > 798**

**Example 3**

Use the following digits to make the largest number possible and the smallest number possible : 2, 4, 0, 8, 6

**Solution** 

- The largest number possible is : 86,420  
"Hint : write the digits from the greatest to the least"
- The smallest number possible is : 20,468  
"Hint : write the digits from the least to the greatest, but don't put 0 digit in the highest place value".

**check your understanding**

1. Compare, write **>** or **<**.

$$3,291 \bigcirc 3,591 \quad 5,148 \bigcirc 4,185 \quad 2,459 \bigcirc 4,378 \quad 6,450 \bigcirc 6,540$$

2. Circle the greatest number of the following.

$$6,509 \quad 6,950 \quad 6,590$$

3. Write the greatest and the least 5-digit numbers made up from the digits : 7, 3, 6, 0, 8

**Notes for parents :**

- Ask your child to tell you a number greater than 4,321 and another number less than 8,765.

## Exercise

# 1

## 1-1 Review Digit, Numeral, Number

REMEMBER

UNDERSTAND

APPLY

PROBLEM SOLVING

From the school book

1. Write each number in the appropriate column. Some may go in more than one column.

983

thirty-seven

six

0

9

seventy-five

2,300,540

one hundred

Digit	Number	Numeral

2. Circle all the numerals below.

seven

Xxxxxx

345

forty-nine

16 dogs

0

704

ten birds

1,343,342

addition

twenty-six

2

3. Vocabulary Building In your own words, write a brief definition of the terms digit, number and numeral.

4. Sara says that in the number 458 there are 3 digits. Do you agree or disagree? Explain.

5. Bassem says "the numeral 5,002 has 3 digits". Do you agree or disagree? Explain.

6. Write a numeral that has 4 digits.

7. Write a numeral that has 5 different digits.

8. Use the following digits to make the largest number possible and the smallest number possible.

a. 5, 8, 9, 2

• The largest number is \_\_\_\_\_

• The smallest number is \_\_\_\_\_

b. 3, 4, 1, 7, 5

• The largest number is \_\_\_\_\_

• The smallest number is \_\_\_\_\_

c. 3, 9, 0, 5, 7

• The largest number is \_\_\_\_\_

• The smallest number is \_\_\_\_\_

d. 2, 0, 3, 5, 6, 1

• The largest number is \_\_\_\_\_

• The smallest number is \_\_\_\_\_

9. Complete the following.

a. The largest 5-digit number is \_\_\_\_\_

b. The smallest 5-digit number is \_\_\_\_\_

c. The largest 5-different digit number is \_\_\_\_\_

d. The smallest 5-different digit number is \_\_\_\_\_

10. Write the place value and the value of the colored digit.

	place value	value
a. 69,284		
c. 730,460		
e. 24,378		
g. 320,045		
i. 59,730		

	place value	value
b. 481,206		
d. 156,392		
f. 40,520		
h. 501,483		
j. 78,029		

11. Compare, Write  $>$  or  $<$ .

- a. 48,047        49,123  
 c. 322,647        322,467  
 e. 526,540        526,550

- b. 175,362        175,290  
 d. 321,054        83,266  
 f. 50,320        50,410

12. Compare the numbers below and circle the greater.

23,410    22,999

111,223    101,345

4,890    4,891

13. Compare the numbers below and circle the smaller.

548,176    548,173

100,000    99,999

175,362    175,290

14. Writing About Math Consider the numbers 26, 260 and 62.

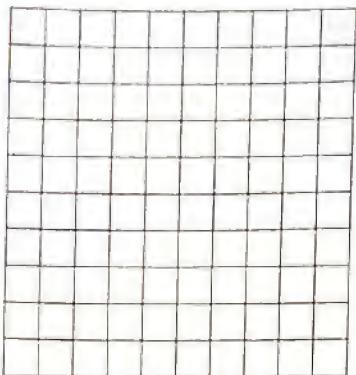
Explain what strategies you would use to determine the greatest number.

Try to use the words digit, numeral, or number to explain your thinking. Be prepared to share your thinking.

## Multiple Choice Questions

Choose the correct answer.

1. What number is represented in the picture ?



- A. 36      B. 53  
C. 63      D. 67

2. How many different numerals are there in the picture ?

x	1	2	3	4	5	6
1	1	2	3	4	5	6
2	2	4	6	8	10	12
3	3	6	9	12	15	18
4	4	8	12	16	20	24
5	5	10	15	20	25	30
6	6	12	18	24	30	36

- A. 12      B. 18  
C. 36      D. 48

3. Roman Numerals are based on the following symbols :

X = 10, V = 5, and I = 1

So, the Roman Numeral XVI represents  $10 + 5 + 1 = 16$

1	5	10	50	100	500	1000
I	V	X	L	C	D	M

Using the same rule, what does LXV represent ?

- A. 55      B. 56      C. 61      D. 65

4. How many digits does the numeral 30,693 have ?

- A. 3      B. 4  
C. 5      D. 6

5. What is the value of the digit 3 in the numeral 439,102 ?

- A. 300      B. 3,000  
C. 30,000      D. 300,000

6. Which of the following numbers is the largest ?

- A. 83,987      B. 8,315  
C. 833,400      D. 833,312

7. Which of the following is the least number possible formed from the digits : 2, 7, 0, 6, 4

- A. 2,467      B. 20,647  
C. 20,467      D. 764,20

Lesson  
**2**

- 1-2 Really Big Numbers**
- 1-3 Changing Values**
- 1-4 Review Comparing Values**

**Pre-study Place-value chart through thousands**

The least distance from the Earth to the Moon is about 384,402 kilometres.

The place-value chart shows this number.

PERIOD			PERIOD		
THOUSANDS			ONES		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
3	8	4	4	0	2
300,000	80,000	4,000	400	0	2



Each group of three digits is called a **period**. Each period has ones, tens, and hundreds in it. The number 384,402 has two periods, ones and thousands.



**MATH IDEA** Place-value and period names help you read and write numbers.



**Standard Form :** 384,402

**Word Form :** Three hundred eighty-four thousand, four hundred two.

**Expanded Form :**  $300,000 + 80,000 + 4,000 + 400 + 2$

**Examples**

Standard form	Word form	Expanded form
40,915	forty thousand, nine hundred fifteen	$40,000 + 900 + 10 + 5$
607,304	six hundred seven thousand, three hundred four	$600,000 + 7,000 + 300 + 4$

**Notes for parents :**

- Let your child remember that he/she can use the expanded form as an easy way to read a number, for example :  $(2,000 + 600 + 30 + 4)$  is read as two thousand, six hundred thirty-four.



## Learn Really big numbers

### Million

There are about 1,000 words on a page of a newspaper.

With 1,000 words on a page,

10 pages have 10,000 words

100 pages have 100,000 words

1,000 pages have 1,000,000 words.

To show this number a period for Millions has to be added to the left of the thousands period in the place-value chart.



PERIOD			PERIOD			PERIOD		
MILLIONS			THOUSANDS			ONES		
Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
		1	0	0	0	0	0	0

Write : 1,000,000

Read : One million

One Million is a large number.

If you read 100 words a minute, it would take you almost 7 days nonstop to read 1,000,000 words.



### More about millions

Egypt population in 2020 was 102,334,404  
look at this number on the place-value chart.

PERIOD			PERIOD			PERIOD		
MILLIONS			THOUSANDS			ONES		
H	T	O	H	T	O	H	T	O
1	0	2	3	3	4	4	0	4
↑ Hundred Millions place	↑ Ten Millions place	↑ Millions place	↑ Hundred Thousands place	↑ Ten Thousands place	↑ Thousands place	↑ Hundreds place	↑ Tens place	↑ Ones place

This number read as :

One hundred two million, three hundred thirty-four thousand, four hundred four.

or in a short way : 102 million, 334 thousand, 404

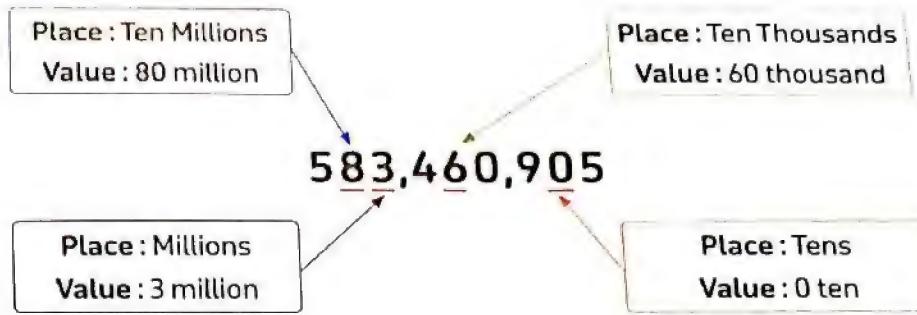
#### Math tip

The place-value chart helps you read greater numbers. You say: "102" then at the comma you name the period, "million".

**Example 1**

What is the place and value of each underlined digit?

583,460,905

**Solution** [💡]**Milliard (Billion)**

China has the world's largest population  
In 1980, the population of China reached  
about 1,000,000,000



To show this number a column for  
**Milliards** has to be added to the left  
of the Millions period in  
the place-value chart.

PERIOD				PERIOD				PERIOD			
MILLIARDS	MILLIONS			THOUSANDS			ONES				
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones		
1	0	0	0	0	0	0	0	0	0		

Write : 1,000,000,000

Read : One milliard

One Milliard is a really large number.

- Ask your child to tell you the value and the place value of each digit in the number : 243,019,505.

More about milliards

Did you know the world's population in 2020 was over 7 milliards ? It was about 7,794,798,739.  
Look at this number on the place-value chart.

PERIOD				PERIOD				PERIOD			
MILLIARDS	MILLIONS			THOUSANDS			ONES				
0	H	T	0	H	T	0	H	T	0		
7	7	9	4	7	9	8	7	3	9		

This number read as :

Seven milliard, seven hundred ninety-four million  
seven hundred ninety-eight thousand,  
seven hundred thirty-nine.

or in a short way :

7 milliard, 794 million, 798 thousand, 739

**Example 2**

In the numeral 3,418,079,265, what digit in the :

- a. Thousands place ?
- b. Ten Millions place ?
- c. Milliards place ?
- d. Hundred Thousands place ?

**Solution**

- a. 9
- b. 1
- c. 3
- d. 0

How to read a large number ?

① Divide the number (from right to left)  
into "periods" each period contains 3 digits.

6,208,196,318

② Use the place-value chart to help you read the large number.

PERIOD				PERIOD				PERIOD			
MILLIARDS	MILLIONS			THOUSANDS			ONES				
0	H	T	0	H	T	0	H	T	0		
6	2	0	8	1	9	6	3	1	8		
6 milliard	208 million			196 thousand			318				

Notes for parents :

- Help your child to use periods to read multi-digit numbers in an easy way.



Start from the left and read the number in each period followed by the period name as follows.

Reading

6,208,196,318

Six milliard, two hundred eight million,  
one hundred ninety-six thousand, three hundred eighteen.

In a short way : 6 milliard, 208 million, 196 thousand, 318

Use the place value  
chart to help you  
reading numbers

### Example 3

Match the cards that have the same numeral.

a. 43,509,458

b. 403,590,548

c. 4,103,905,484

d. 4,950,854

1. 4 milliard, 103 million,  
905 thousand, 484

2. four million, nine hundred fifty  
thousand, eight hundred fifty-four

3. forty-three million, five hundred  
nine thousand, four hundred  
fifty-eight

4. 403 million, 590 thousand, 548

### Solution

a. → 3

b. → 4

c. → 1

d. → 2



### Check your understanding

#### 1. In each of the following numerals :

- underline the digit in the Hundred Thousands place.
- circle the digit in the Ten Millions place.
- draw a square around the digit in the Milliards place.

a. 7,561,492,048

b. 7,914,500,721

#### 2. Read the following numbers

a. 912,031,301

b. 70,804,230

c. 5,003,521,216

\* Ask your child to write a number through milliard and then ask him/her to read it loudly

## Learn Changing values



**MATH IDEA** The value of a digit depends on its place-value position in the number.

- The value of a digit changes as it moves to the left within a numeral.
- Our place-value system is based on tens.

Each place value in this system is 10 times greater than the one to the right of it.



**Remember**  
A digit is one of the ten symbols 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9 used to write numbers.

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
2	2	2	2	2	2	2
$2 \times 1,000,000$	$2 \times 100,000$	$2 \times 10,000$	$2 \times 1,000$	$2 \times 100$	$2 \times 10$	$2 \times 1$
2,000,000	200,000	20,000	2,000	200	20	2

- A digit in one place represents 10 times as much as it represents in the place to its right.
- For example :** the Hundreds place is 10 times greater than the Tens place, so the value of 2 changes from 20 to 200.
- Observe the pattern in the number of zeroes.

**Example :** Use place value chart to know the value of each digit.

MILLIONS			THOUSANDS			ONES		
H	T	O	H	T	O	H	T	O
1	4	9	5	9	8	0	0	0

- The value of the digit 8 in the Thousands place is 8,000
- The value of the digit 9 in the Ten Thousands place is 90,000
- The value of the digit 5 in the Hundred Thousand place is 500,000
- The value of the digit 9 in the Millions place is 9,000,000
- The value of the digit 4 in the Ten Millions place is 40,000,000
- The value of the digit 1 in the Hundred Millions place is 100,000,000

### Notes for parents :

- Let your child understand that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.



The distance between the Earth and the Sun is about 149,598,000 km

**Example 4**

Fill in the blanks below.

- The value of the digit 3 in the number 7,431,210 is \_\_\_\_\_
- The value of the digit 0 in the number 560,444,218 is \_\_\_\_\_
- 7 in the Hundreds place is \_\_\_\_\_
- \_\_\_\_\_ is 10 times greater than one hundred thousand.
- 30 tens equals \_\_\_\_\_

**Solution**

- |              |  |  |
|--------------|--|--|
| a. 30,000    | b. 0                                   | c. 700 (think : $7 \times 100 = 700$ ) |
| d. 1,000,000 | e. 300 (think : $30 \times 10 = 300$ ) |  |

**Check your understanding**

- Fill in the blanks below.**
  - The value of the digit 5 in the number 1,578,416,112 is \_\_\_\_\_
  - The value of the digit 3 in the number 30,560,210 is \_\_\_\_\_
  - \_\_\_\_\_ is 10 times greater than three hundreds.
- What is the value of the following :**

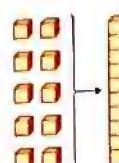
a. 8 in the Tens place ? _____	b. 5 in the Ten Thousands place ? _____
c. 400 tens ? _____	d. 60 thousands ? _____
- How does the value of 5 change as it moves from the Hundreds place to the Thousands place ?**  
\_\_\_\_\_  
\_\_\_\_\_

\* Help your child to solve the questions of "check your understanding".

**Learn****Review comparing values**

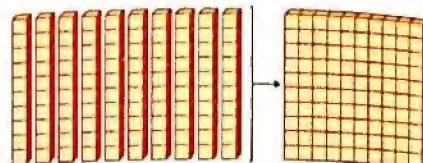
Think about the relationships among the Base-Ten blocks.

There are 10 ones in 10.



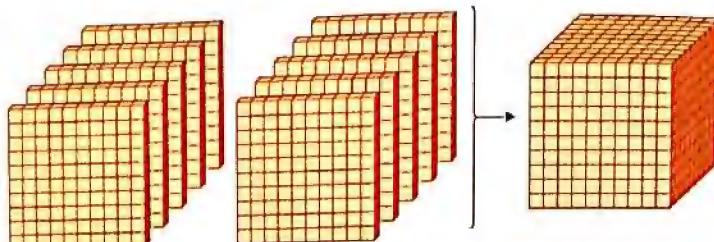
$$10 = 10 \text{ ones } [10 \times 1]$$

There are 10 tens in 100.



$$100 = 10 \text{ tens } [10 \times 10]$$

There are 10 hundreds in 1,000.



$$1,000 = 10 \text{ hundreds } [10 \times 100]$$

The blocks that represent numbers greater than 1,000 are too large to picture here.  
You can use the place-value chart to understand larger numbers.

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
					1
				1	0
			1	0	0
			1	0	0
1	0	0	1	0	0

$$\begin{aligned} &= 1 \times 1 \\ &= 10 \times 1 \\ &= 10 \times 10 \\ &= 10 \times 100 \\ &= 10 \times 1,000 \\ &= 10 \times 10,000 \end{aligned}$$

Note that :

- 10 is 10 times greater than 1.
- 100 is 10 times greater than 10.
- 1,000 is 10 times greater than 100.
- The value of the digit 1 represents 10 times as you move one place to the left on the place-value chart.

**Examples for relationships between place values :**

- The value of the Hundreds place is 10 times greater than the value of the Tens place.
- The value of the Thousands place is 10 times greater than the value of the Hundreds place.
- The value of Thousands place is 100 times greater than the value of the Tens place.

**Notes for parents :**

- Let your child describe the relationships between the place values, for example the value of the Thousands place is 10 times greater than value of Hundreds place .

**Example 5**

In the number 555,555 :

- In which place is the 5 has a value of 10 times greater than the 5 in the Hundreds place ?
- In which place is the 5 has a value of 100 times greater than the 5 in the Tens place ?
- In which place is the 5 has a value of 1,000 times greater than the 5 in the Hundreds place ?

**Solution**

- a. Thousands place

THOUSANDS			ONES		
H	T	O	H	T	O
5	5	5	5	5	5

A diagram showing the value of the hundreds place (5) multiplied by 10 to get the thousands place (5). An arrow labeled "x10" points from the hundreds place to the thousands place.

- b. Thousands place.

THOUSANDS			ONES		
H	T	O	H	T	O
5	5	5	5	5	5

A diagram showing the value of the tens place (5) multiplied by 10 to get the hundreds place (5), and the value of the ones place (5) multiplied by 10 to get the tens place (5). Two arrows labeled "x10" point from the tens and ones places to the hundreds place.

- c. Hundred Thousands place.

THOUSANDS			ONES		
H	T	O	H	T	O
5	5	5	5	5	5

A diagram showing the value of the ones place (5) multiplied by 10 to get the tens place (5), the tens place (5) multiplied by 10 to get the hundreds place (5), and the hundreds place (5) multiplied by 10 to get the thousands place (5). Three arrows labeled "x10" point from the ones, tens, and hundreds places to the thousands place.

**Example 6**

- What is the number that is 1,000 times greater than 450 ?
- What is the number that is 100 times greater than 15 million ?

**Solution**

a.  $450 \times 1,000 = 450,000$  [You may add three zeroes to 450]

b.  $15,000,000 \times 100 = 1,500,000,000$  [You may add two zeroes to 15 million]

\* Ask your child how many times greater is the Hundreds place than the Tens place for the same digit ?  
He/she should answer : 10 times.

**Example 7**

Fill in the blanks below.

- [4 tens and 8 ones]  $\times 10 =$  \_\_\_\_\_
- [8 hundreds and 8 tens]  $\times 100 =$  \_\_\_\_\_
- [3 thousands and 2 hundreds]  $\times 1,000 =$  \_\_\_\_\_
- 78 thousands  $\times 100 =$  \_\_\_\_\_

**Solution** 

- 480  think :  $(40 + 8) \times 10 = 48 \times 10 = 480$
- 88,000  think :  $(800 + 80) \times 100 = 880 \times 100 = 88,000$
- 3,200,000  think :  $(3,000 + 200) \times 1,000 = 3,200 \times 1,000 = 3,200,000$
- 7,800,000  think :  $(78,000 \times 100 = 7,800,000)$


 **Check** your understanding

## 1. In the number 33,333 :

- In which place is the 3 has a value of 100 times greater than 3 in the Hundreds place ?
- 

- In which place is the 3 has a value of 1,000 times greater than the 3 in the Ones place ?
- 

## 2. Fill in the blank below :

- The number that is 100 times greater than 12 million is \_\_\_\_\_
- The number that is 10 times greater than 125 million is \_\_\_\_\_
- [5 hundreds and 3 tens]  $\times 1,000 =$  \_\_\_\_\_
- 35 ten thousands  $\times 100 =$  \_\_\_\_\_

**Notes for parents :**

- Direct your child to solve "check your understanding" and tell how he/she solve each problem.

## Exercise

# 2

### 1-2 Really Big Numbers

### 1-3 Changing Values

### 1-4 Review Comparing Values

REMEMBER

UNDERSTAND

CAPTURE

PROBLEM SOLVING

From the school book

1. Complete the table as in the example.

		BILLIARDS			MILLIONS			THOUSANDS			ONES		
	Number	0	H	T	O	H	T	O	H	T	O		
Ex.	5,604,453,987	5	6	0	4	4	5	3	9	8	7		
a.	8,714,326,518	—	—	—	—	—	—	—	—	—	—		
b.	753,009,300	—	—	—	—	—	—	—	—	—	—		
c.	7,354,621	—	—	—	—	—	—	—	—	—	—		
d.	8,000,300	—	—	—	—	—	—	—	—	—	—		
e.	923,508	—	—	—	—	—	—	—	—	—	—		

2. Write the value of the underlined digit according to its place in each number as in the example.

► Example. 47,209,531 → 40,000,000

a. 58,486,098 → \_\_\_\_\_

c. 62,478,300 → \_\_\_\_\_

e. 24,041,683 → \_\_\_\_\_

g. 41,691,403 → \_\_\_\_\_

i. 669,084,422 → \_\_\_\_\_

k. 30,303,333 → \_\_\_\_\_

m. 7,623,102,481 → \_\_\_\_\_

o. 5,555,555 → \_\_\_\_\_

b. 3,784,168,411 → \_\_\_\_\_

d. 462,417 → \_\_\_\_\_

f. 8,000,418,617 → \_\_\_\_\_

h. 321,428,218 → \_\_\_\_\_

j. 7,261,909 → \_\_\_\_\_

l. 2,100,841,621 → \_\_\_\_\_

n. 714,291 → \_\_\_\_\_

p. 321,416,218 → \_\_\_\_\_

## 3. Complete as the example.

► Example. The place value of the digit 7 in the number 7,321,521,800 is **Milliards**

- The place value of the digit 0 in the number 5,321,041,758 is \_\_\_\_\_
- The place value of the digit 2 in the number 9,152,747,180 is \_\_\_\_\_
- The place value of the digit 8 in the number 4,821,400,006 is \_\_\_\_\_
- The place value of the digit 4 in the number 748,263,501 is \_\_\_\_\_

## 4. In the numeral 234 568, what digit is in the

- Tens place? \_\_\_\_\_
- Hundred Thousands place? \_\_\_\_\_
- One Thousands place? \_\_\_\_\_

## 5. Using the following number, complete the directions.

1,542,345,678

- Underline the digit in the Ten Millions place.
- Draw a square around the digit in the One Milliards place.
- Circle the digit in the Hundreds place.

## 6. What is the value of each of the following.

- |                               |                                   |
|-------------------------------|-----------------------------------|
| a. 2 in the Tens place? _____ | b. 7 in the Hundreds place? _____ |
| c. 30 tens? _____             | d. 60 thousands? _____            |

## 7. Fill in the blanks as in the example.

► Ex. •  $23,800 = 238$  hundreds.

- |                                     |  |
|-------------------------------------|--|
| a. $56,000 =$ _____ thousands.      | b. $280,000 =$ _____ hundreds.             |
| c. $25,600$ tens = _____ thousands. | d. $300$ thousands = _____ hundreds.       |
| e. $55$ thousands = _____ hundreds. | f. $850$ thousands = _____ hundreds.       |
| g. $72,000$ tens = _____ thousands. | h. $87,900,000$ hundreds = _____ millions. |

8. Choose a digit between 1 and 9. Use this number to complete the charts.

MILLIARDS	MILLIONS				THOUSANDS				ONES		
0	H	T	O	H	T	O	H	T	O		

- My digit is \_\_\_\_\_
- Value of my digit in the Ones place \_\_\_\_\_
- Value of my digit in the Tens place \_\_\_\_\_
- Value of my digit in the Hundreds place \_\_\_\_\_
- Value of my digit in the Thousands place \_\_\_\_\_
- Value of my digit in the Ten Thousands place \_\_\_\_\_
- Value of my digit in the Hundred Thousands place \_\_\_\_\_
- Value of my digit in the Millions place \_\_\_\_\_
- Value of my digit in the Ten Millions place \_\_\_\_\_
- Value of my digit in the Hundred Millions place \_\_\_\_\_
- Value of my digit in the One Milliards place \_\_\_\_\_



9. Match the cards that have the same numeral.

a. 75,421,392

1. • 2 milliard, 500 million, 422 thousand,  
300

b. 701,007,700

2. • Two million, five hundred thousand,  
four hundred twenty-two.

c. 2,500,422,300

3. • 75 million, 421 thousand, 392

d. 2,500,422

4. • Seven hundred one million, seven  
thousand seven hundred.

- 10.** Write a 9-digit number that has a 3 in the Ten Millions place, a 5 in the Hundred Thousands place, and a 2 in the Ones place. Is this the only number you could have written? Explain.
- 

- 11.** Use the digits 5, 7, 3, 1, 8, 2, 9 and 6 to make the greatest number you can, then use the same digits to make the smallest number you can.

• The greatest is \_\_\_\_\_ • The smallest is \_\_\_\_\_

• How did the value of 7 change from the greatest number and the smallest number? Why did it change? Use words and numbers to explain your thinking.

---

- 12.** How are 12,940 and 120,940 similar?

• How are they different? Use words and numbers to explain your thinking.

---

- 13.** Is the digit 8 always worth 8 ():

• Why or why not?

Use what you know about place value to support your answer.

---

- 14.** Sameh says: "In the number 5,555,555 all digits have the same value".

• Do you agree or disagree? Explain your thinking using numbers and words.

---

- 15.** How many?

- a. How many tens are there in one hundred? \_\_\_\_\_
  - b. How many tens are there in one thousand? \_\_\_\_\_
  - c. How many hundreds are there in one million? \_\_\_\_\_
  - d. How many thousands are there in one million? \_\_\_\_\_
  - e. How many hundreds are there in one milliard? \_\_\_\_\_
  - f. How many tens are there in one million? \_\_\_\_\_
-

## 16. Complete as the example.

► Ex. [5 hundreds and 2 tens]  $\times 10$        $500 \text{ and } 20 = 520, 520 \times 10 = 5,200$

- [4 tens and 3 ones]  $\times 10$  = \_\_\_\_\_
- [5 hundreds and 7 tens]  $\times 100$  = \_\_\_\_\_
- [2 hundreds and 3 tens]  $\times 10$  = \_\_\_\_\_
- [3 thousands and 2 hundreds]  $\times 100$  = \_\_\_\_\_
- [7 thousands and 8 hundreds]  $\times 100$  = \_\_\_\_\_
- [4 ten thousands and 3 tens]  $\times 100$  = \_\_\_\_\_
- [5 hundred thousands and 7 hundreds]  $\times 10$  = \_\_\_\_\_
- [3 ten thousands and 4 thousands]  $\times 100$  = \_\_\_\_\_



17. ☐ New Pharaoh Ant colonies form through a process called budding. Queens in existing colonies and several workers leave their nest to start new colonies elsewhere. So, a colony that starts with 200 ants can quickly grow \_\_\_\_\_ times greater, to a size of 20,000 ants. (Complete)

18. ☐ A Pharaoh Ant colony can vary in size from a few dozen to several hundred thousand individuals. Imagine a Pharaoh Ant colony consisting of 333,333 ants !
- In which place is the 3 has a value 10 times greater than the 3 in the Ten Thousands place ?  
\_\_\_\_\_
  - In which place is the 3 has a value 100 times greater than the 3 in the Ones place ?  
\_\_\_\_\_

19. ☐ How many times greater is the value of a number in the One Thousands place than the same number in the Tens place ? Use an example to support your thinking.

**20.** Fill in the blanks.

- is 10 times greater than one hundred thousand.
- is 10 times greater than two hundred.
- is 10 times greater than seven thousand.
- $56 \text{ thousands} \times 100 =$  \_\_\_\_\_
- In the number 4,043, then 4 in the Tens place is \_\_\_\_\_ times less than 4 in the Thousands place.

**21.** Amgad said that there are 300 hundreds in a 3,000. Do you agree or disagree?

Use what you have learned about place value to explain your thinking.

---



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**22.** Ashraf says that the number 6,235,340 is exactly 1,000 less than the number 6,245,340.

Do you agree? Explain how you know.

---



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**23.** If there are 12 million Pharaoh Ants on the Kalahari and South America has 100 times as many Pharaoh Ants as the Kalahari, how many ants are in South America? Show your work.

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**24.** The number 147,976 has the digit 7 in two different places. How many times greater is the value represented by the 7 in the Thousands place than the value of the 7 in the Tens place?

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## Multiple Choice Questions

**D**

Choose the correct answer.

- |   |   |
|---|---|
| <p>1. The place value of the digit 2 in the number 245,080,701 is</p> <p>A. Millions.<br/>B. Ten Millions.<br/>C. Hundred Millions.<br/>D. Hundred Thousands.</p>   | <p>2. The value of the digit 5 in the number 2,456,300 is</p> <p>A. 5 millions.<br/>B. 50 millions.<br/>C. 50 thousands.<br/>D. 500 thousands.</p>                          |
| <p>3. 75 thousands _____ 750 hundreds.</p> <p>A. &gt;<br/>B. &lt;<br/>C. =</p>  | <p>4. _____ is 100 times less than one million.</p> <p>A. 100                      B. 1,000<br/>C. 10,000                  D. 100,000</p>                                   |
| <p>5. 720 hundreds = _____ tens.</p> <p>A. 720                      B. 7,200<br/>C. 72,000                D. 720,000</p>  | <p>6. [8 hundreds and 4 ones] <math>\times</math> 100 =</p> <p>A. 80,400                B. 8,040<br/>C. 8,400                  D. 804,000</p>                               |
| <p>7. Bassem wrote the number 333,373,333</p> <p>In which number below does the digit 7 have a value that is 1,000 times the value of the 7 in Bassem's number?</p> <p>A. 333,333,373            B. 333,337,333<br/>C. 373,333,333           D. 733,333,333</p> |   |
| <p>8. 102,000 = _____ hundreds.</p> <p>A. 1,020                   B. 1,200<br/>C. 102                     D. 10,200</p>   | <p>9. The value of the digit 0 in the number 301,572,941 is _____</p> <p>A. 0                        B. 100<br/>C. 1,000                  D. 100,000</p>                    |
| <p>10. In which number does the 8 have a value of eight hundred?</p> <p>A. 538,419                B. 781,015<br/>C. 271,825                D. 419,782</p>   | <p>11. The value of the 6 in 306,278 is 10 times the value of the 6 in which number?</p> <p>A. 21,637                B. 360,541<br/>C. 412,016               D. 521,367</p> |

- 12.** 24,000 is      times more than 2,400.  
 A. 10                    B. 100  
 C. 1,000                D. 10,000
- 13.** The number that is 100 times greater than 560 is  
 A. 560                    B. 5,600  
 C. 56,000                D. 560,000

- 14.** The value of the 3 in 306,278 is 1,000 times the value of the 3 in which number?  
 A. 21,637                B. 360,541  
 C. 413,016               D. 521,367
- 15.** 4,000 is      times less than 400,000  
 A. 100                    B. 10  
 C. 1,000                D. 10,000

- 16.** Choose the number in which the digit 7 has the greatest value.  
 A. 821,730,521            B. 152,007,000            C. 51,078,623            D. 7,810,521

- 17.** Berry drew the 7 cards with the digits shown below.

5     1     6     8     2     0     4

If she uses each card only once, what is the greatest number possible with the digit 6 in the Tens place?

- A. 8,541,260            B. 8,542,160            C. 8,542,610            D. 8,654,210

- 18.** The number 348 is multiplied by 10. What is the value of the digit 4 in the product?  
 A. The value of the digit 4 in the product is 4  
 B. The value of the digit 4 in the product is 40  
 C. The value of the digit 4 in the product is 400  
 D. The value of the digit 4 in the product is 4,000

# 1-5 Many Ways to Write

# 1-6 Composing and Decomposing

## Learn Many ways to write numbers

The average distance between Jupiter and the sun is 778,340,821 km.



Place-Value Chart								
MILLIONS			THOUSANDS			ONES		
H	T	O	H	T	O	H	T	O
7	7	8	3	4	0	8	2	1

**Standard Form:** 778,340,821

"Commas are used to show periods"

**Expanded Form:**  $700,000,000 + 70,000,000 + 8,000,000$

$$+ 300,000 + 40,000 + 800 + 20 + 1$$

"Zeroes are not needed in expanded form because there is nothing in that place value; as 0 in Thousands place".

**Word Form:** Seven hundred seventy-eight million, three hundred forty thousand, eight hundred twenty-one.

"Commas are used to separate Millions, Thousands and Ones periods".

**Short-Word Form:** 778 million, 340 thousand, 821.

### Notes

- We use standard form most often.
- Numbers written in expanded form show their full value.



### Notes for parents :

- Your child may be confused about how to represent a place value with a 0 digit in expanded form. For example :  $30,456 = 30,000 + 400 + 50 + 6$ . The 0 is not represented in expanded form because in standard form the 0 represents that there is nothing in that place value.

**Example 1**

Write each number in standard form.

- $9,000,000,000 + 300,000,000 + 20,000,000 + 600,000 + 400 + 30$
- Three milliard, six hundred million, five hundred forty thousand, six hundred fifty.

**Solution** 

a.  $9,320,600,430$

b.  $3,600,540,650$

**Example 2**

Write each number in word form.

- 4,008,011,091
- $60,000,000 + 7,000,000 + 200,000 + 40,000 + 500 + 10 + 3$

**Solution** 

- Four milliard, eight million, eleven thousand, ninety-one.
- Sixty-seven million, two hundred forty thousand, five hundred thirteen.

**Check** your understanding

1. Write each number in standard form.

a.  $5,000,000,000 + 70,000 + 1,000 + 40 + 9$  \_\_\_\_\_

b. Fifty-eight million, thirty-seven thousand, forteen. \_\_\_\_\_

2. Write the word form of the number 3,300,030,303

\_\_\_\_\_

3. Write the expanded form of the number 7,608,490

\_\_\_\_\_

**Notes for parents :**

• Your child may struggle to say large numbers and need to be reminded to group the numbers into periods as they read them aloud.

• Remind your child to use commas when writing numbers in the word form.

## Learn Composing and decomposing numbers

- Composing numbers means [put together], and decomposing numbers means [broken apart].
- You can decompose the number 5,456,387 in different ways using place value chart:

MILLIONS			THOUSANDS			ONES		
H	T	O	H	T	O	H	T	O
		5	4	5	6	3	8	7

► 1<sup>st</sup> way: Expanded Form:

$$5,456,387 = 5,000,000 + 400,000 + 50,000 + 6,000 + 300 + 80 + 7$$

► 2<sup>nd</sup> way:

$$\begin{aligned} 5,456,387 = & [5 \times 1,000,000] + [4 \times 100,000] + [5 \times 10,000] + [6 \times 1,000] + [3 \times 100] \\ & + [8 \times 10] + [7 \times 1] \end{aligned}$$

### Example 1

► Complete the following.

a. Composed: 8,035,402,176

Decomposed: \_\_\_\_\_

MILLIARDS	MILLIONS			THOUSANDS			ONES		
O	H	T	O	H	T	O	H	T	O
—	—	—	—	—	—	—	—	—	—

b. Composed: \_\_\_\_\_

$$\text{Decomposed: } [7 \times 1,000,000] + [9 \times 100,000] + [8 \times 1,000] + [2 \times 10] + [5 \times 1]$$

MILLIARDS	MILLIONS			THOUSANDS			ONES		
O	H	T	O	H	T	O	H	T	O
—	—	—	—	—	—	—	—	—	—

- Make sure that your child know the difference between the terms compose and decompose.

## Solution

a. Decomposed:  $[8 \times 1,000,000,000] + [3 \times 10,000,000] + [5 \times 1,000,000] + [4 \times 100,000]$   
 $+ [2 \times 1,000] + [1 \times 100] + [7 \times 10] + [6 \times 1]$

MILLIARDS	MILLIONS				THOUSANDS			ONES		
0	H	T	O	H	T	O	H	T	O	
8	0	3	5	4	0	2	1	7	6	

b. Composed: 7,908,025

## Example 2

**Example –** Decompose the following numerals using expanded form.

- b.** 3 millions, 409 thousands, 735  
**a.** 340,051  
**c.** Twenty-three million, two hundred thousand, eight hundred forty-one.

## Solution

- a.  $300,000 + 40,000 + 50 + 1$       b.  $3,000,000 + 400,000 + 9,000 + 700 + 30 + 5$   
c.  $20,000,000 + 3,000,000 + 200,000 + 800 + 40 + 1$

 **Check** your understanding

► Complete the following.

- 1. Compose:** 7,504,092,415

### Decompose:

- ### **2. Compose:**

$$\begin{aligned} \text{Decompose: } & [3 \times 1,000,000,000] + [2 \times 100,000,000] + [5 \times 10,000,000] \\ & + [4 \times 1,000,000] + [7 \times 10,000] + [8 \times 1,000] + [6 \times 10] + [9 \times 1] \end{aligned}$$

#### **Notes for parents:**

- Make sure that your child knows how to represent a zero in a place when the number is decomposed.

## Exercise 3

### 1-5 Many Ways to Write 1-6 Composing and Decomposing

REMEMBER

UNDERSTAND

APPLY

PROBLEM SOLVING

From the school book

1. Write the expanded form of each of the following.

a.  50,391

b. 740,821

c. 1,756,300

d. 54,632,405

e. 701,462,051

f. 9,989,791,985

2. Write each number in standard form.

a.  Three hundred seventy.

b. 16 million, 201 thousand, 856.

c. 439 million, 898 thousand, 13.

d. Sixty-three million, seven hundred ninety-six thousand, nine hundred three.

e. Five hundred twenty-seven million, nine hundred thousand, six hundred forty.

f. Three milliard, four hundred two million, seventeen.

g.   $20,000 + 7,000 + 400 + 20 + 2$ .

h.  $1,000,000,000 + 400,000,000 + 3,000,000 + 20 + 5$ .

i.  $700,000,000 + 30,000 + 1,000 + 500 + 40$ .

## 3. Write each number in word form.

a.  $\square 48$

b. 507

c. 567,421

d. 3,562,504

e. 54,213,450

f. 911,394,116

g. 5,408,921,002

h.  $\square 700,000 + 60,000 + 20 + 9$

i.  $5,000,000,000 + 7,000,000 + 900,000 + 3,000 + 20$

j.  $900,000,000 + 60,000,000 + 6,000,000 + 40,000 + 600 + 5$

k.  $5,000,000,000 + 700,000,000 + 30,000,000 + 800,000 + 9,000 + 10 + 7$

## 4. Complete the following.

a.  $700,005,009 =$  seven hundred \_\_\_\_\_, five \_\_\_\_\_, nine.b.  $4,030,400,050 =$  \_\_\_\_\_ milliard, \_\_\_\_\_ million, \_\_\_\_\_ thousand,c.  $417,900,770 =$  \_\_\_\_\_ seventeen million, nine hundred \_\_\_\_\_, \_\_\_\_\_ seventyd.  $2,100,080,005 =$  \_\_\_\_\_ milliard, one \_\_\_\_\_, eighty \_\_\_\_\_, five.

e.  $52,376 =$  fifty two      , three hundred  
 $=$       + 2,000 +      + 70 +

f.  $345,61 =$       + 40,000 + 5,000 + 100 + 60 + 1  
= three hundred forty      thousand,      hundred

5. Complete the following.

a. Composed :

Decomposed :  $[7 \times 10,000] + [8 \times 1,000] + [5 \times 100] + [2 \times 10] + [6 \times 1]$

MILLIARDS	MILLIONS			THOUSANDS			ONES		
0	H	T	O	H	T	O	H	T	O

b. Composed : 309,431

Decomposed :

MILLIARDS	MILLIONS			THOUSANDS			ONES		
0	H	T	O	H	T	O	H	T	O

c. Composed :

Decomposed :

MILLIARDS	MILLIONS			THOUSANDS			ONES		
0	H	T	O	H	T	O	H	T	O
2	8	0	5	4	0	0	6	9	3

d. Composed : 7,052,318,709

Decomposed :

MILLIARDS	MILLIONS			THOUSANDS			ONES		
0	H	T	O	H	T	O	H	T	O

e. Composed:

Decomposed:

MILLIARDS	MILLIONS			THOUSANDS			ONES		
0	H	T	O	H	T	O	H	T	O
3	2	0	9	5	0	0	7	0	8

6. Decompose the following numerals using expanded form.

a. 170,392 = \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_

b. 105,208 = \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_

c. 3,456,209 = \_\_\_\_\_

d. 2 million, 277 thousand, 191 = \_\_\_\_\_

e. 35 million, 17 thousand, 230 = \_\_\_\_\_

f. 17 million, 230 thousand, 14 = \_\_\_\_\_

g. Three milliard, one hundred thirty-seven million, six hundred nineteen thousand, eighty-eight = \_\_\_\_\_

h. Two milliard, four hundred twenty million, three hundred fifty-two thousand, one hundred three = \_\_\_\_\_



## Challenge

7. Write 16 ten thousands + 5 thousands + 64 tens in standard form = \_\_\_\_\_

8. Find two 9-digit numbers with the difference between them is one million.  
\_\_\_\_\_ and \_\_\_\_\_

## Multiple Choice Questions

Choose the correct answer.

1. What is the standard form for

$3,000,000 + 500,000 + 50$ ?

- A. 355
- B. 3,500,500
- C. 3,500,050
- D. 3,005,005

2. Which of the following shows the numeral

"five milliard, four hundred twenty-six thousand" in standard form?

- A. 5,000,426
- B. 5,426,000
- C. 5,000,426,000
- D. 5,426,000,000

3. Which of the following represents the number 4,305,082 written in expanded form?

- A.  $4,000,000 + 300,000 + 50,000 + 800 + 2$
- B.  $4,000,000 + 300,000 + 50,000 + 80 + 2$
- C.  $4,000,000 + 30,000 + 5,000 + 800 + 2$
- D.  $4,000,000 + 300,000 + 5,000 + 80 + 2$

4. Which is the correct way to write the numeral 25,702 in word form?

- A. twenty-five, seven hundred two.
- B. twenty-five thousand, seven hundred two.
- C. twenty-five ten thousand, seven hundred two.
- D. twenty-five thousand, seventy-two.

5. Which expression decomposes the

numeral 50,374 in expanded form?

- A.  $50,000 + 300 + 70 + 4$
- B.  $50,000 + 3,000 + 70 + 4$
- C.  $50,000 + 3,000 + 700 + 4$
- D.  $5,000 + 300 + 70 + 4$

6. Which is a compose to  $[7 \times 10,000] +$

$[2 \times 10] + [4 \times 1]$ ?

- A. 724
- B. 70,240
- C. 7,024
- D. 70,024

7. Which numeral and phrase are ways of writing the number that is composed of

3 ten thousands, 5 hundreds, and 2 ones? Select two correct answers.

- A. 310,521
- B. 30,520
- C. 30,502
- D. three hundred ten thousand, five hundred twenty-one.
- E. thirty thousand, five hundred two.
- F. thirty thousand, five hundred twenty.

# Concept 1 Assessment | Unit 1



1. Put (✓) to the correct answer and (✗) to the incorrect answer.

- The largest 5-digit number is 98,765 [ ]
- The place value of the digit 9 in the number 891,782 is Hundred Thousands. [ ]
- 400 thousands = 4,000 hundreds. [ ]
- [4 thousands and 3 hundreds]  $\times 100 = 43,000$  [ ]
- In the number 7,073 the 7 in the Tens place is 100 times less than the 7 in the Thousands place. [ ]
- 8 in Thousands place is 80,000 [ ]

2. Choose the correct answer.

- The value of the digit 5 in the number 52,789 is 10 times the value of the digit 5 in which numbers?  
A. 36,563      B. 45,642      C. 27,951      D. 502,622
- 314,562 \_\_\_\_\_ 47,998  
A. >      B. <      C. =
- The value of the digit 0 in the number 301,526,432 is \_\_\_\_\_  
A. 1,000      B. 10,000      C. 10,000,000      D. 0
- 350,000 is \_\_\_\_\_ times more than 35,000  
A. 10      B. 100      C. 1,000      D. 10,000
- In which number does the 4 have a value of four thousands?  
A. 403,562      B. 345,263,651      C. 165,174,232      D. 1,426,005,791
- Which statement explains how the value of the 6 in the numbers 360 and 3,600 are different?  
A. 360 is 100 times less than 3,600      B. 360 is ten times greater than 3,600  
C. 3,600 is 100 times greater than 360      D. 3,600 is ten times greater than 360

3. Complete.

- The value of the digit 1 in the number 1,324,072,569 is \_\_\_\_\_
- 38 thousands = \_\_\_\_\_ hundreds.
- [3 hundred thousands and 8 tens]  $\times 10 =$  \_\_\_\_\_

- d. is 10 times greater than three hundred thousand.
- e. The number 257 is multiplied by 1,000, then the new value of the digit 5 in the product is .
- f. In the number 324,312 the 3 in the Hundred Thousands place is \_\_\_\_\_ the value of the 3 in the Hundreds place.

## 4. Match the cards that have the same numeral.

- |                  |  |
|------------------|--|
| a. 2,743,562     | 1. 2 milliard, 743 thousand, 562   |
| b. 2,000,743,562 | 2. twenty million, seven hundred forty-three thousand, five hundred sixty-two        |
| c. 20,743,562    | 3. 2 million, 743 thousand, 562  |
| d. 2,743,562,000 | 4. two milliard, seven hundred forty-three million, five hundred sixty two thousands |

5. Ahmed wrote the number 146,152,780. The answer is 6,000,000. What is the question ?

6. What number is twice the value of the Ten Thousands digit in 423,008 ?

7. Write a number in which the value of the digit 4 in the number 41,792 is 10 times the value of a digit 4 in your number.

8. Ashraf said that 24,613,351 is one million more than 14,613,351. Describe his error.

9. The number 863 is multiplied by 1,000. What is the new value of the digit 6 in the product ?

10. The number 341,426 has the digit 4 in two different places. How many times greater is the value represented by the 4 in Ten Thousands place than the value of the 4 in the Hundred place ?

11. How many thousands are there in one million ?

12. Use the words in the box to complete the sentence.

In \_\_\_\_\_, numbers are separated by commas into groups of three digits, called \_\_\_\_\_

**Words to know**

periods  
standard form  
expanded form

Concept

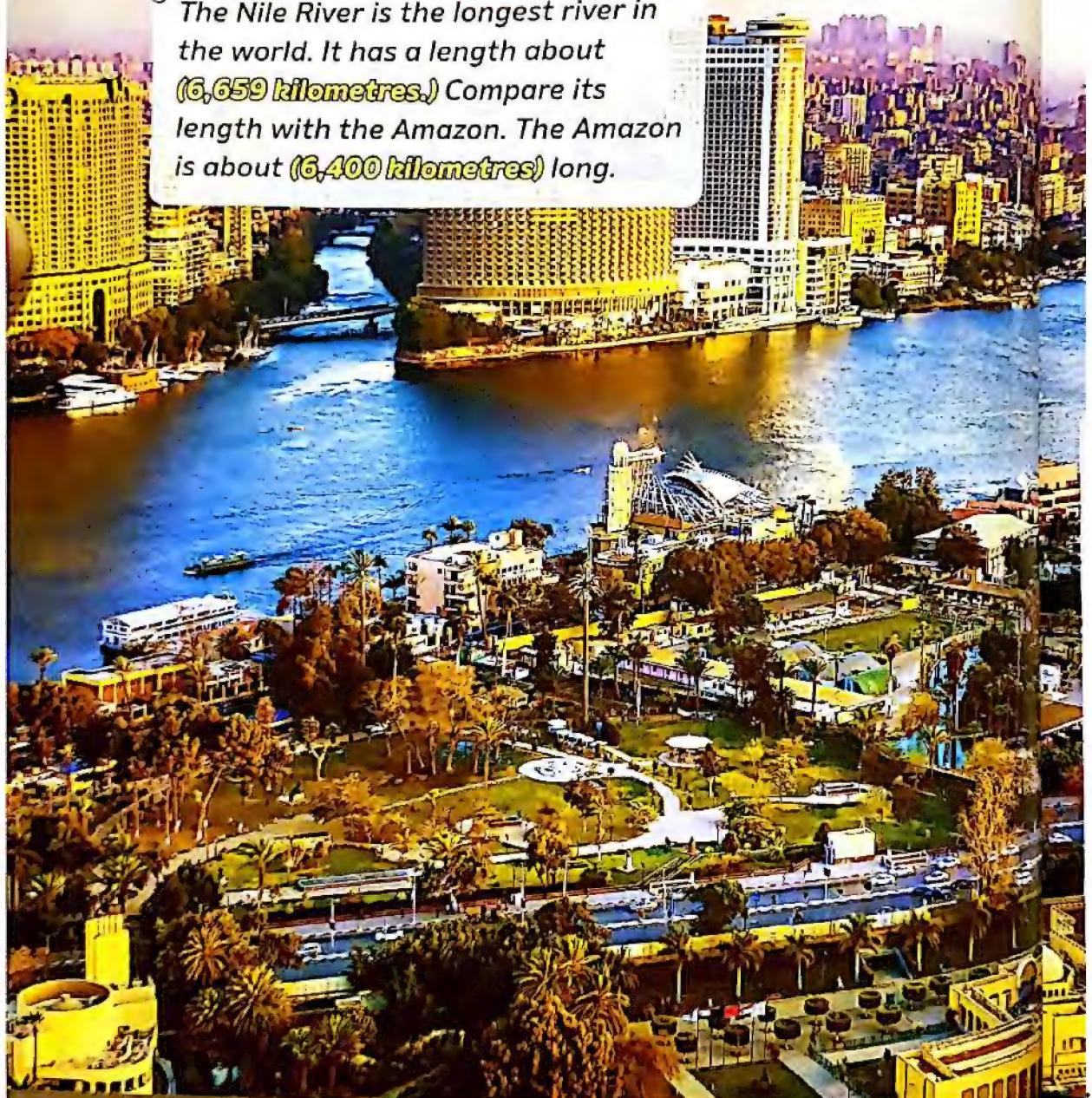
2

# Using Place Value



## Fast Fact

The Nile River is the longest river in the world. It has a length about (6,659 kilometres.) Compare its length with the Amazon. The Amazon is about (6,400 kilometres) long.



## Concept Overview

### In concept 2 :

Using Place Value, students apply what they have learned about place value to compare and order very large numbers. Students build understanding of the importance of place value in reading, writing, and understanding numerals to the one Milliard place and in estimating. Students review the purpose of estimation and practise two strategies, "front-end estimation and rounding using place value" and determine which strategy provides the most accurate estimates. These place value concepts help students master more challenging concepts in primary 4, including multiplication, division, fractions and decimals.



Lesson No.	Lesson Name	Vocabulary Terms	Learning Objectives
Lesson 4	1-7 Review Comparing Really Big Numbers	Compare - Less than - Greater than - Equal to	<ul style="list-style-type: none"><li>Students will use place value to compare large numerals.</li><li>Students will use symbols to express numerical comparisons.</li></ul>
	1-8 Comparing Numbers in Multiple Forms	Decomposed form - Expanded form - Standard form - Word form	<ul style="list-style-type: none"><li>Students will compare numbers in multiple forms.</li><li>Students will describe strategies for comparing numbers in multiple forms.</li></ul>
Lesson 5	1-9 Descending and Ascending Numbers	Ascending - Descending - Order - Compare - Decomposed form - Expanded form - Standard form - Word form	<ul style="list-style-type: none"><li>Students will order numbers in multiple forms.</li><li>Students will describe strategies for ordering numbers in multiple forms.</li></ul>
Lesson 6	1-10 Predicting the Unpredictable	Estimation - Front-end estimation - Reasonable	<ul style="list-style-type: none"><li>Students will explain front-end estimation .</li><li>Students will use front-end estimation to approximate large numbers.</li></ul>
	1-11 Rounding Rules	Estimation - Rounding - Nearest - Reasonable - Accurate	<ul style="list-style-type: none"><li>Students will apply multiple strategies to round numbers .</li><li>Students will discuss whether rounding or front-end estimation provide a more accurate estimate.</li></ul>



## 1-7 Review Comparing Really Big Numbers

## 1-8 Comparing Numbers in Multiple Forms

**Learn** Comparing large numbers

Bassem turned a spinner five times and called out one digit each time. Sara and Mina each wrote a 5-digit number.

Sara 1 2 , 6 7 3      Mina 1 2 , 7 6 3



- How can you tell who wrote the greater number?
- You can compare two numbers with the same number of digits by starting at the left and moving right until you come to a pair of digits that do not have the same value.

Compare 12,673 and 12,763. Start at the left. Check each place until the digits are different.

Step 1	Step 2	Step 3
Compare the Ten Thousands. <b>12,673</b> $\downarrow$ same number of Ten Thousands <b>12,763</b>	Compare the Thousands. <b>12,673</b> $\downarrow$ same number of Thousands <b>12,763</b>	Compare the Hundreds. <b>12,673</b> $\downarrow$ $7 > 6$ <b>12,763</b>

Since  $12,763 > 12,673$  Mina wrote the greater number.

**Remember**

When comparing numbers, the number which has more digits is the greater.

Example :  $5,302,200 > 899,529$

because 5,302,200 has more digits than 899,529

**Notes for parents :**

- Ask your child to consider how many digits are in a numeral when he/she compares

**More Examples:**

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• 754,042 &lt; 755,950</li> <li>• 42,437 &gt; 42,347</li> </ul> | <ul style="list-style-type: none"> <li>• 755,972 &lt; 1,752,421</li> <li>• 6,406,367 = 6,406,367</li> </ul> |
|--|---|

**Example 1**

Write [>, < or =] to compare. Circle the first digit in each number that helps you determine which number is greater.

- |                               |                           |
|-------------------------------|---------------------------|
| a. 37,048      ○ 37,184       | b. 217,906      ○ 271,906 |
| c. 4,010,065      ○ 4,000,056 | d. 810,340      ○ 810,340 |

**Solution** 

- |                          |                      |
|--------------------------|----------------------|
| a. 37,048 < 37,184       | b. 217,906 < 271,906 |
| c. 4,010,065 > 4,000,056 | d. 810,340 = 810,340 |

**Check your understanding**

Write [>, < or =] to compare. Circle the first digit in each number that helps you determine which number is greater.

- |                              |                                  |
|------------------------------|----------------------------------|
| a. 2,346 ○ 2,338             | b. 478,765 ○ 479,112             |
| c. 723,215 ○ 723,215         | d. 752,321,271 ○ 72,321,271      |
| e. 503,278,105 ○ 503,279,100 | f. 7,492,102,235 ○ 7,491,102,235 |

• If your child has difficulty making comparisons, let he/she first circle the place where the digits are different.

## Learn Comparing numbers in multiple forms

- You have studied before how to write numbers in different forms: standard, expanded and word form.
- You can compare numbers in any forms.
- You may convert to standard form to compare, or use place value in expanded form or in word form to compare.

### Example 2

Write ( $>$ ,  $<$  or  $=$ ) to compare:

a.  $70,000 + 4,000 + 50 + 7$

$70,000 + 4,000 + 500 + 70$

b. Two milliard, seven hundred thirty-eight thousand, ten.

Two milliard, seven hundred thirty-five thousand, eleven.

c.  $3,000,000 + 7,000 + 800 + 9$

Three million, seven thousand, eight hundred nine.

d.  $[7 \times 1,000,000] + [5 \times 100,000] + [3 \times 1,000] + [4 \times 100] + [9 \times 1]$

$7,000,000 + 500,000 + 3,000 + 400 + 90$

### Solution



a.  $<$

b.  $>$

c.  $=$

d.  $<$



### Check your understanding

Write ( $>$ ,  $<$  or  $=$ ) to compare.

a.  $500,000 + 70,000 + 90 + 8$

$1,000,000 + 5,000 + 1$

b. Three milliard, two hundred fifty-two thousand, three hundred four.

Three milliard, two hundred fifty-two thousand, thirty-four.

c.  $[8 \times 1,000,000] + [6 \times 1,000] + [5 \times 100] + [7 \times 10]$

$[8 \times 1,000,000] + [2 \times 10,000] + [6 \times 1,000] + [5 \times 100] + [9 \times 1]$

d.  $2,000,000,000 + 400,000,000 + 2,000 + 30 + 2$

$2,000,000,000 + 50,000,000 + 8,000,000 + 9,000 + 50 + 9$

### Notes for parents :

- Your child may struggle with comparing numbers in word form or expanded form. He/she may convert to standard form to compare.

## Exercise

# 4

## 1-7 Review Comparing Really Big Numbers

## 1-8 Comparing Numbers in Multiple Forms

REMEMBER

UNDERSTAND

APPLY

PROBLEM SOLVING

From the school book

1. Compare. Write ( $>$ ,  $<$  or  $=$ ).

a. 707



770

b. 1,207



1,207

c. 10,525



10,255

d. 190,098



19,098

e. 291,074



219,704

f. 9,854,705



11,012,314

g. 5,680,421,226



5,598,672,565

h. 7,798,562,415



7,798,567,999

i. 89,418,147



89,418,247

j. 571,600,254



571,600,329

k. 940,668



940,669

l. 1,000,000,000



900,000,000

m. 100,000,000



99,999,999

n. 40,000



400 thousands

o. 7 ten thousands



7,000

p. 5,000



500 thousands

q. 9 thousands



9,000

r. 7,100,600,200



8 billions

s. 3 billions



300 ten millions

2. Compare. Write ( $>$ ,  $<$  or  $=$ ).

a.

7,000 millions



7 billions

b.

14,617



$10,000 + 4,000 + 600 + 20$

c.

5 billions, 367 thousand



5,367,000,000

d.

Ninety-seven million, three hundred one



$90,000,000 + 7,000,000 + 3,000 + 1$

e.

5,193,492,500



five billion, three hundred million, seven hundred fifteen thousand, thirty-four.

f.

$(7 \times 100,000,000) + [4 \times 10,000,000] + [9 \times 10,000] + [8 \times 100] + [1 \times 10]$



$70,000 + 9,000 + 600 + 40 + 3$

g.  8,040,761,903

$8,000,000,000 + 400,000,000 + 700,000 + 60,000 + 1,000 + 900 + 3$

h.  $4,000,000,000 + 5,000 + 1$

$4,000,000 + 70,000 + 10$

i.  Seventeen million, four hundred twenty-five thousand, six hundred five.

$[1 \times 10,000,000] + [7 \times 1,000,000] + [4 \times 100,000] + [2 \times 10,000] + [6 \times 100] + [5 \times 1]$

j.  Four hundred twenty-three thousand, twelve

$400,000 + 30,000 + 2,000 + 20 + 1$

## 3. Tell whether each statement is true or false.

a.  $4,581 > 4,000 + 800 + 50 + 1$

 True False

b. 40 hundreds + 50 tens + 81 ones = 4,581

c. 4 thousands + 8 hundreds + 1 ten + 5 ones &gt; 4,581

d.  $5,000,000 + 400,000 + 10,000 + 6,000 + 300 + 7 < 5,416,370$

e. 50 hundreds + 40 tens + 81 ones = 4,581

f. 50 thousands + 8 hundreds + 1 ten + 4 ones &lt; 50,418

## 4. Find each missing digit.

a.  $6,106 > 6,\underline{1}9$

b.  $2,117 = \underline{1},117$

c.  $4,382 < 4,3\underline{2}$

d.  $91,472 > 9,\underline{1},472$

e.  $114,899 < 114,\underline{1}99$

f.  $703,9\underline{1} = 703,981$

g.  $11,234 > 1,\underline{1},785$

h.  $67,813 > 67,8\underline{1}3$

i.  $82,\underline{1}88 = 82,588$

j.  $179,00\underline{1} < 179,001$

k.  $856,\underline{1}34 < 856,134$

l.  $683,129 < 6,\underline{1}3,129$

5. Find all the digits that can replace each  $\underline{\quad}$ .

a.  $9\underline{1}7,536 < 957,549$

b.  $423,\underline{1}96,517 < 423,695,815$

c.  $84,41\underline{1},811 < 84,413,604$

d.  $24,\underline{1}62 > 24,701$

e.  $7,00\underline{1},852,314 < 7,007,864,718$

**6.** Create numbers that make the comparison true. Use all the lines.

- $\underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}} < 890,789,000$
- $642,578,291 > \underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}}$
- $\underline{\hspace{1cm}} \underline{\hspace{1cm}} 2,456,800,900 > \underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}}$
- $4,748,562,700 < \underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}}$
- $\underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}} < 3,784,562,931$

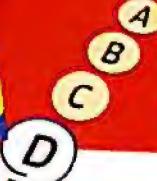
**7.** Write a number.

- Create a numeral that is less in the Hundred Thousands place than ( $<$ ) 612,793
- Create a numeral that is less in the Hundred Thousands place than ( $<$ ) 893,820
- Create a number that is greater in the Millions place than ( $>$ ) 8,933,001
- Create a numeral that is greater in the Hundred Millions place than ( $>$ ) 247,854,923
- Create a numeral that is less in the Ten Millions place than ( $<$ ) 32,427,400
- Create a number that is greater in the Milliards place than 5,555,555,555
- Write a numeral in expanded form that is equal ( $=$ ) 2,445,232,197
- Create a numeral that is less in the Thousands place than ( $<$ ) 735,872
- Create a numeral that is greater in the Ten Thousands place than ( $>$ ) six milliard, four hundred million, seven hundred twenty thousand, nine hundred eleven.
- Create a numeral that is greater in the Millions place than ( $>$ )  $50,000,000 + 2,000,000 + 700 + 30$
- Create a numeral that is greater in the Ten Thousands place than ( $<$ )  $3,000,000,000 + 400,000,000 + 400,000 + 2,000 + 300 + 2$
- Create a numeral that is greater in the Milliards place than ( $>$ ) 3,456,789,000



## Challenge

- Which is greater, the number that is 1,000 less than 13,495 or the number that is 10,000 less than 23,495?
- Describe the error in the following number sentence, and then explain how you would correct it.  $24,152,614 < 24,125,614$



## Multiple Choice Questions

Choose the correct answer.

1.  $785,743$

A. >

$794,832$

B. <

C. =

2.  $83,754$

A. >

$100,000$

B. <

C. =

3.  $100,000,040$

million, forty.

A. >

B. <

C. =

One hundred

4. Which number sentence is TRUE?

A. 300 thousand < 99,900

B. 62,889 > 104,772

C.  $150,600 > 100,000 + 50,000 + 6$

D.  $7,569,120 > 7,569,210$

5. Which number sentence is NOT TRUE?

A.  $2,304 < 2,340$

B.  $27,920 > 27,790$

C.  $1,005,301 > 1,050,901$

D.  $80,044 < 80,404$

6. Which digit makes the number sentence

TRUE?

$4,201,351 > 4,20\text{ } ,351$

A. 3

B. 2

C. 1

D. 0

7. Which of the following digits makes the number sentence TRUE?

$754,321 < 7\text{ }4,321$

A. 3

B. 4

C. 5

D. 6

8. Which of the following numeral makes the sentence TRUE?

Two milliard, three hundred forty-five thousand < \_\_\_\_\_

A. 2,344,000

B. 2,000,345

C. 2,001,345,000

D. 2,000,345,000

9. Which of the following numerals is greater than this numeral

" $3,000,000 + 500,000 + 300 + 70 + 2$ "?

A. 3,005,372

B. 3,500,732

C. 3,500,273

D. 3,005,732

10. Which of the following numerals is less than this numeral

"40 million, 900 thousand, 508"?

A. 49,000,508

B. 40,900,508

C. 40,009,580

D. 40,900,580

# 1-9 Descending and Ascending Numbers

## Learn Ordering numbers

The table shows the population of four governorates in Egypt in 2021. You can order the governorates by their population from greatest to least as follows:

1. The number 10,058,942 has the most number of digits, so it is the greatest number.
2. The number 450,528 has the least number of digits, so it is the least number.
3. Compare 5,452,718 and 5,510,876 which have the same number of digits.

Check each place until the digits are different.



Governorate	Population
Cairo	10,058,942
North Sinai	450,528
Alexandria	5,452,718
Souhag	5,510,876

### Step 1

Compare the Millions.

5,452,718

↓  
same number  
of Millions

5,510,876

### Step 2

Compare the Hundred Thousands.

5,452,718

↓  
5,510,876

} 5 > 4

Then : 5,510,876 > 5,452,718

From above :

10,058,942 > 5,510,876 > 5,452,718 > 450,528

- In order of their population the governorates are Cairo, Souhag, Alexandria and North Sinai.

### Notes for parents :

- Remind your child to start comparison at the greatest place value.



**Example 1**

Order these numbers from least to greatest.

2,896,016

1,188,580

1,517,550

**Solution**

**Step 1** ➡ Write the numbers, lining up places. Compare

2,896,016 ← greatest

1,188,580

1,517,550

**Step 2** ➡ Write the remaining numbers, lining up places. Compare.

1,188,580

1,517,550 ← greater

**Step 3** ➡ Write the numbers from least to greatest.

1,188,580      1,517,550      2,896,016

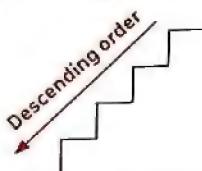
**Example 2**

Write each of the following numerals in standard form and arrange in a descending order.

- $[7 \times 1,000,000,000] + [4 \times 10,000,000] + [5 \times 1,000] + [3 \times 100]$
- Seven milliard, four hundred million, one thousand, two
- $7,000,000,000 + 500,000,000 + 600,000 + 300$
- 745,300

**Remember**

Descending order is ordering numbers from greatest to least.

**Solution**

Standard form	Descendingly
7,040,005,300	7,500,600,300
7,400,001,002	7,400,001,002
7,500,600,300	7,040,005,300
745,300	745,300

**Notes for parents :**

- If your child has trouble ordering numbers, ask him/her to align the numbers vertically and compare digits left to right.

**Example 3**

Arrange the following in a descending order, using the forms in which the numbers are written.

- Seven milliard, three hundred forty thousand, two
- 7,340,200
- $(7 \times 1,000,000) + [3 \times 100,000] + [4 \times 10,000] + [9 \times 10]$
- $7,000,000,000 + 3,000,000 + 20$

**Solution**  (you may write each number in standard form to facilitate the solution)

The order is :  $7,000,000,000 + 3,000,000 + 20$

- , seven milliard, three hundred forty thousand, two
- , 7,340,200
- ,  $(7 \times 1,000,000) + [3 \times 100,000] + [4 \times 10,000] + [9 \times 10]$

**Example 4**

Write a numeral that is greater than 7,856,342 and a numeral that is less than 7,856,342 and write the three numerals in an ascending order.

**Solution** 

The greater numeral is : 7,856,343 "You may write other numerals"

The smaller numeral is : 7,856,341 "You may write other numerals"

The order is : 7,856,341 , 7,856,342 , 7,856,343

**Remember**

Ascending order is ordering numbers from least to greatest.



 **Check** your understanding

Arrange the following in a descending order, using the standard form.

- Three milliard, forty million, seventy-one thousand, ten.
- $(3 \times 1,000,000,000) + [5 \times 1,000,000] + [7 \times 1,000] + [1 \times 100] + [1 \times 10]$ .
- $3,000,000,000 + 30,000,000 + 10$  • 3,300,710,400

**Solution** 

- Remind your child about the meaning of the two terms ascending order and descending order.

## Exercise

# 5

## 1-9 Descending and Ascending Numbers

REMEMBER

UNDERSTAND

APPLY

PROBLEM SOLVING

From the school book

1. Write the numbers in an ascending order.

a. 7,122,890 , 700,122,089 , 70,122,098 , 7,120,980

The order is: \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

b. 3,452,805 , 3,542,805 , 542,905 , 1,000,000,000

The order is: \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

c. 430,000,459 , 43,000,549 , 403,000,456 , 430,549,000

The order is: \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

d. 2,000,751,240 , 2,100,101,240 , 2,010,010,860 , 299,782,561

The order is: \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

2. Write all of the digits that can replace each .

a. 567 < 5 . 5 < 582 \_\_\_\_\_

b. 3,408 < 3, . 30 < 3,540 \_\_\_\_\_

c. 52.780 > 5 . 790 > 50,120 \_\_\_\_\_

d. 4,464,545 > 4,4 . 3,535 > 4,443,550 \_\_\_\_\_

3. Write each of the following numerals in standard form and arrange the numerals in an ascending order.

a. • Three hundred fifty-two thousand, sixty-seven

• 3,052,100

•  $[3 \times 100,000] + [5 \times 10,000] + [2 \times 1,000] + [6 \times 100] + [2 \times 10]$

• Three hundred sixty-seven thousand, two hundred one.

Standard form	Ascending order

- b. •  $3,000,000 + 400,000 + 5,000 + 3$   
     • Three million, four hundred fifty thousand, three  
     • 3,453,000  
     •  $[3 \times 1,000,000] + [4 \times 100,000] + [5 \times 10,000] + [3 \times 10]$

Standard form	Ascending order

- c. • Two milliard, four million, seven hundred thousand  
     • 2,400,700,000  
     •  $[2 \times 1,000,000,000] + [4 \times 10,000,000] + [7 \times 1,000]$   
     • Three milliard

Standard form	Ascending order

- d. • Five milliard, one hundred million, sixty-four  
     • 99,137,563  
     •  $5,000,000,000 + 10,000,000 + 70 + 8$   
     •  $[5 \times 1,000,000,000] + [1 \times 100,000,000]$

Standard form	Ascending order

- e. •  Three hundred sixty-two thousand, four hundred ninety-one  
     • 363,906  
     •  $[3 \times 100,000] + [6 \times 10,000] + [2 \times 1,000] + [8 \times 100] + [8 \times 10]$   
     •  $300,000 + 60,000 + 4,000 + [9 \times 10]$   
     • Three hundred sixty-three thousand, five hundred eighty-nine

Standard form	Ascending order

- f. • Six hundred million, four thousand, eighty-five  
     •  $6,000,000 + 400,000 + 90 + 9$   
     • 6,0743,000  
     • Sixty million, seven hundred thousand  
     •  $[9 \times 1,000,000,000] + [7 \times 100]$

Standard form	Ascending order

4. Arrange in a descending order, using the forms in which the numbers are written.

a. • Five milliard, six hundred thousand, four.

• 561,040

• Five milliard, sixty thousand, four hundred.

• 6,600,000

•  $[5 \times 1,000,000,000] + [4 \times 100,000] + [6 \times 10]$

The order is :

b. • Nine million, seven hundred thirty-one thousand, seventy.

• 90,731,007

•  $[9 \times 100,000,000] + [8 \times 10,000] + [5 \times 100]$

•  $9,000,000 + 700,000 + 40,000 + 50$

• Seven hundred million, eighty-four.

The order is :

c. •  $7,000,000,000 + 400,000,000 + 70,000 + 300 + 9$

• Seven milliard, fifty-three thousand, seventy-eight.

• 8,000,000,000

• Seven milliard, two hundred million,

•  $[7 \times 1,000,000,000] + [5 \times 100,000,000] + [9 \times 100]$

The order is :

d. •  $[2 \times 1,000,000,000] + [5 \times 10,000,000] + [3 \times 1,000] + [6 \times 1]$

- Two milliard, five hundred million, two thousand.
- 2,543,269
- Five million, four hundred thousand, seventy-one
- $2,000,000,000 + 2,000,000 + 500$

The order is :

---



---



---



---

5. Create a numeral that is greater than 980,622 and a numeral that is less than 980,622

, then write the three numerals in an ascending order.

The greater numeral is \_\_\_\_\_, the smaller numeral is \_\_\_\_\_

The order is : \_\_\_\_\_

---

6. Write a numeral that is greater than 4,789,562,430 and a numeral that is less than

4,789,562,430 and write the three numerals in an ascending order.

The greater numeral is \_\_\_\_\_, the smaller numeral is \_\_\_\_\_

The order is : \_\_\_\_\_

---

7. Create a numeral that is greater than 8,164,201,404 and a numeral that is less than

8,164,201,404 then write the three numerals in a descending order.

The greater numeral is \_\_\_\_\_, the smaller numeral is \_\_\_\_\_

The order is : \_\_\_\_\_

---

8. Write a numeral that is greater than 6,562,942,735 and a numeral that is less than

6,562,942,735 and write the three numerals in descending order.

The greater numeral is \_\_\_\_\_, the smaller numeral is \_\_\_\_\_

The order is : \_\_\_\_\_

## Multiple Choice Questions

Choose the correct answer.

- 1.** Which choice shows the numbers in an ascending order?

- |                 |                 |                 |                  |
|-----------------|-----------------|-----------------|------------------|
| A. 1. 3,456,871 | B. 1. 7,456,232 | C. 1. 5,786,321 | D. 1. 1,263,572  |
| 2. 3,578,462    | 2. 6,785,000    | 2. 5,795,786    | 2. 12,213,573    |
| 3. 987,541      | 3. 6,670,785    | 3. 5,895,432    | 3. 4,262,563     |
| 4. 5,743,261    | 4. 5,700,726    | 4. 6,721,000    | 4. 1,000,000,000 |
| 5. 8,784,561    | 5. 5,700,624    | 5. 7,000,000    | 5. 7,865,321,000 |

- 2.** Which choice shows the numbers in a descending order?

- |                                |                                |
|--------------------------------|--------------------------------|
| A. 1. $600 + 80 + 6$           | B. 1. $800 + 60 + 2$           |
| 2. $800 + 60 + 2$              | 2. eight hundred sixty         |
| 3. eight hundred sixty         | 3. 826                         |
| 4. six hundred twenty-eight    | 4. $600 + 80 + 6$              |
| 5. 826                         | 5. six hundred twenty-eight    |
| <br>                           |                                |
| C. 1. six hundred twenty-eight | D. 1. six hundred twenty-eight |
| 2. 826                         | 2. $600 + 80 + 6$              |
| 3. $600 + 80 + 6$              | 3. 826                         |
| 4. $800 + 60 + 2$              | 4. eight hundred sixty         |
| 5. eight hundred sixty         | 5. $800 + 60 + 2$              |

- 3.** Which of the following digits makes the sentence is true?  $785 > 7\ \underline{\quad} 5 > 755$

- A. 2      B. 4      C. 6      D. 8

- 4.** The table below shows the average distances from the planets to the Sun.

Planet	Jupiter	Mars	Venus	Earth
Distance from the Sun in km	778,340,821	227,943,000	108,209,000	149,598,000

Which planet from above is nearest to the Sun?

- A. Jupiter      B. Mars      C. Venus      D. Earth

## 1-10 Predicting the Unpredictable

## 1-11 Rounding Rules

**Learn****Predicting the unpredictable**

Ahmed went to the stadium to watch a football match for his favorite team.

The stadium capacity is 72,200 seats.

Ahmed used front-end estimation to expect the number of spectators in this match.

He said the number of spectators was about 70,000.

- In this strategy, you just look at the first digit of the number from the left side, or the highest place value. write the first digit as it is, and change the rest of digits into zeros.

**Example**

Use front-end strategy to estimate.

Number	Estimate
87,562	80,000
3,457,426	3,000,000
Five milliard, two hundred thousand, five hundred three	5,000,000,000
$9,000,000,000 + 700,000,000 + 8,000 + 700 + 40 + 5$	9,000,000,000
Seventy-four million, five hundred twenty-eight	70,000,000

**check your understanding**

- Use front-end strategy to estimate.

Number	Estimate
7,845,626	
86,421,000	
Four milliard, sixty-four million, three hundred thousand, thirty-one	
$[6 \times 100,000,000] + [3 \times 10,000,000] + [5 \times 1,000,000] + [7 \times 1,000] + [2 \times 10]$	

**Notes for parents :**

- Tell your child that we use front-end estimation to approximate large numbers.



## Learn Rounding rules

Youssef visited an amusement park on his vacation. He rode a roller coaster that is 2,181 meters long. About how long is the roller coaster?

Since you do not need an exact number, you can estimate by rounding the number.



### Different Ways to round 2,181 to the nearest thousand

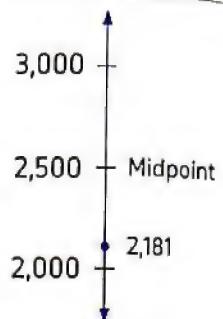
**Way 1** You can use [midpoint strategy].

2,181 is closer to 2,000 than to 3,000

So, round 2,181 to 2,000

Written as  $2,181 \approx 2,000$

and read as 2,181 approximately equals 2,000



**Way 2** You can use [place value strategy]

#### Step 1

Find the place you want to round to. Underline the digit in that place.

2,181  
↑  
Thousands place

#### Step 2

Look at the digit to its right. Circle that digit.

2.181  
↑  
digit to the right

#### Step 3

- If the circled digit is 5 or greater, round up.
- If the circled digit is less than 5, round down.
- Change each digit to the right of the rounding place to 0
- 1 is less than 5, so

$2,181 \xrightarrow{\text{rounds to}} 2,000$

**Solution** The roller coaster is about 2,000 meters long.

#### Notes for parents :

- Remind your child to round up if the digit to the right of the place value he/she wants to round to is equal to or greater than 5.

**Example 1**

Use a number line to round each of the following.

a. 74,231 (to the nearest 1,000)

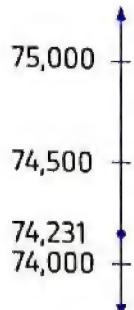
b. 9,360 (to the nearest 100)

**Solution** 

a. 74,231 is between 74,000 and 75,000

then

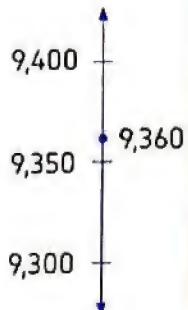
$$74,231 \approx 74,000$$



b. 9,360 is between 9,300 and 9,400

then

$$9,360 \approx 9,400$$

**Example 2**

Use place value strategy to round each of the following.

a. 2,618 (to the nearest 10)

c. 3,697,852,721 (to the nearest Ten Million)

e. 999,999 (to the nearest Ten Thousand)

b. 174,568 (to the nearest 10,000)

d. 7,556,462 (to the nearest Million)

f. 13,999,999 (to the nearest Hundred)

**Solution** 

a. 2,618 → 2,620 [8 > 5]

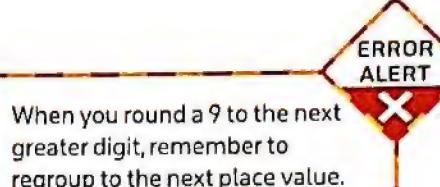
b. 174,568 → 170,000 [4 < 5]

c. 3,697,852,721 → 3,700,000,000 [7 > 5]

d. 7,556,462 → 8,000,000 [5 = 5]

e. 999,999 → 1,000,000 [9 > 5]

f. 13,999,999 → 14,000,000 [9 > 5]

**Check your understanding**

Round the following.

a. 85,721  $\xrightarrow{\text{to the nearest 1,000}}$  \_\_\_\_\_

b. 3,562,291  $\xrightarrow{\text{to the nearest}} \text{Ten Thousand}$  \_\_\_\_\_

c. 3,895  $\xrightarrow{\text{to the nearest}} \text{Hundred}$  \_\_\_\_\_

d. 9,999,998  $\xrightarrow{\text{to the nearest}} \text{Million}$  \_\_\_\_\_

\* If necessary, allow your child to write the standard form of the number before rounding.

## Exercise

# 6

REMEMBER

## 1-10 Predicting the Unpredictable

## 1-11 Rounding Rules

PROBLEM SOLVING

From the school book

1. Use front-end strategy to estimate each of the following.

- a. 7,852,631      b. 78,512,900      c. 3,900,500,231  
d. 8,062,431,562      e. 1,946,621,562      f. 4,622  
g. Seventy-five million, six hundred twenty-two thousand, four hundred thirteen.  
h. Twenty million, seven hundred fifty-one thousand, eighty.  
i. Two milliard, four hundred one million, fourteen thousand.  
j. Three hundred seventy-nine million, four hundred sixty-one thousand, two hundred eight.  
k.  $[7 \times 1,000,000] + [5 \times 100,000] + [4 \times 1,000] + [5 \times 100] + [4 \times 10] + [2 \times 1]$   
l.  $[5 \times 10,000,000] + [8 \times 100,000] + [9 \times 10,000] + [4 \times 100] + [6 \times 1]$   
m.  $800,000 + 7,000 + 400 + 60$   
n.  $3,000,000 + 500,000 + 9,000 + 700 + 10$   
o.  $9,000,000,000 + 20,000,000 + 4,000 + 30$

2. Round each number to the place value of the underlined digit.

- a. 769      b. 7,507      c. 18,682  
d. 57,945      e. 5,645,408      f. 284,792,300  
g. 921      h. 99,814

3. Round to the nearest Ten.

- a. 423      b. 549      c. 495      d. 1,287

4. Round to the nearest Hundred.

- a. 874      b. 416      c. 4,398      d. 1,952

5. Round to the nearest Thousand.

- a. 8,090      b. 9,900      c. 15,123      d. 68,500

6. Round to the nearest Ten Thousand.

- a. 37,205      b. 58,936      c. 324,520      d. 845,625

7. Round to the nearest Hundred Thousand.

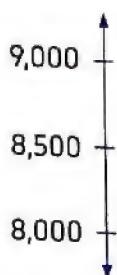
- a. 483,267      b. 678,090      c. 449,300      d. 12,786,500

8. Round to the nearest Million.

- |   |   |
|---|---|
| <p>a. 35,458,936<br/>c. 135,984,600</p> | <p>b. 20,843,267<br/>d. 7,352,894,351</p> |
|---|---|

9. Round each of the following by using the midpoint strategy, record the midpoint of the number line and the place of each number, then round to the nearest thousand.

a. 8,472



b. 17,856



c. 342,351



d. 2,561,432



10. Draw the number line, record the midpoint, then round each of the following numbers.

- a.  250,000 [to the nearest Hundred Thousand]

- b.  700,500 [to the nearest Hundred Thousand]

- c. 362,261 [to the nearest Ten Thousand]

- d. 36,951 [to the nearest Hundred]

11. Round each number to the nearest ten, thousand, hundred thousand, and million.

Numbers	Nearest ten	Nearest thousand	Nearest hundred thousand	Nearest million
a. 1,657,809				
b. 2,709,365				
c. 16,442,896				
d. 8,851,342				

12. Write 5 numbers if rounded to the nearest Thousand the result is 312,000.

• \_\_\_\_\_

\_\_\_\_\_

13. Use the table to answer the questions.

a. Which kind of magazine has a circulation of about 5,000,000 ? \_\_\_\_\_

b. Round to the nearest million each number of the table.

Circulation of Magazines	
Kinds of Magazines	Number Circulated
News magazine	5,748,324
Sports magazine	4,928,165
Food magazine	1,875,692
Travel magazine	1,379,685

14. A number is between 23,750 and 23,760 What could the number be if it is rounded to 23,750?

• \_\_\_\_\_

\_\_\_\_\_

15. A plane's altitude increased by 2,721 metres.

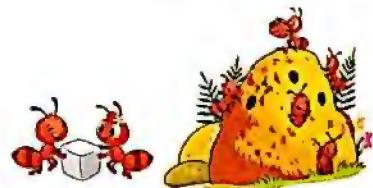
Round this number to the nearest Thousand. \_\_\_\_\_

16. A runner ran 1,537 metres, but he describes the distance he ran with a rounded number.

Round 1,537 to the nearest Hundred. \_\_\_\_\_

17. A record number of 23,386 ants lives in colony A.

Round this number to the nearest Ten Thousands. \_\_\_\_\_



## Challenge

18. What is the greatest whole number that rounds to 300,000 ? What is the least ?

• \_\_\_\_\_

## Multiple Choice Questions

Choose the correct answer.

1. Round 387,932 to the nearest hundred.

- A. 387,900
- B. 388,000
- C. 387,930
- D. 390,000

2. Mustafa rounded a number to the nearest ten million. His rounded number was 540,000,000. Which number could have been Mustafa's original number?

- A. 534,107,832
- B. 534,346,203
- C. 537,812,764
- D. 545,448,420

3. Sameh rounded a number and got 340.

Which number could have been his original number?

- A. 336
- B. 347
- C. 350
- D. 349

4. The number that shows 1,236,532,748

rounded to the ten millions place is \_\_\_\_\_

- A. 1,220,000,000
- B. 1,230,000,000
- C. 1,240,000,000
- D. 1,250,000,000

5. Which number could be rounded to 120,000 when rounded to the nearest ten thousand?

- A. 125,678
- B. 116,034
- C. 112,625
- D. 20,789

6. Which number could be rounded to 430,000 when rounded to the nearest Ten Thousand?

- A. 328,782
- B. 437,651
- C. 435,826
- D. 432,198

7. What is the largest number can be rounded to 2,500 when rounded to the nearest hundred?

- A. 2,450
- B. 2,551
- C. 2,549
- D. 2,499

8. By using front-end strategy the estimation of three hundred million, sixty four thousand, 1 is \_\_\_\_\_

- A. 3,000,000
- B. 30,000,000
- C. 300,000,000
- D. 34,000,000

9. By using front-end strategy  $7,756,462 \approx$  \_\_\_\_\_

- A. 7,000,000
- B. 8,000,000
- C. 77,000,000
- D. 7,700,000

# Concept 2 Assessment | Unit 1



**1.** Put (✓) to the correct answer and (✗) to the incorrect answer.

- a.  $754,321 < 98,564$  [ ]
- b.  $3,456,421 \approx 3,500,000$  to the nearest hundred thousand. [ ]
- c. 7,856,226 is estimated to 8,000,000 by front-end strategy. [ ]
- d. Five milliard, two hundred thousand > Five milliard, ninety thousand. [ ]
- e.  $17,856 \approx 20,000$  to the nearest thousand. [ ]
- f.  $5,000,000,000 + 300,000 + 400 + 7 > 5,000,000,000 + 90,000 + 8,000 + 400 + 9$  [ ]

**2.** Choose the correct answer.

- a. Which number rounded to 700,000 when rounded to the nearest hundred thousand  
A. 784,452      B. 653,429      C. 760,304      D. 632,561
- b. Which number is greatest ?  
A. 549,300      B. 4,004,030      C. 5,490,003      D. 594,030
- c. Which shows the numbers in order from least to greatest ?  
A. 102,397 , 102,395 , 102,359      B. 216,001 , 216,101 , 216,010  
C. 422,956 , 422,596 , 422,298      D. 575,029 , 575,209 , 575,290
- d. Which digit makes the number sentence is true ?  
 $7,625,431 > 7,6\_\_5,431$   
A. 1      B. 2      C. 3      D. 4
- e. What is 7,542,613 rounded to the nearest ten thousand ?  
A. 7,543,000      B. 7,540,000      C. 7,500,000      D. 8,000,000
- f. Which comparison is correct ?  
A.  $84,760 < 84,670$       B.  $84,670 = 84,760$   
C.  $84,760 > 84,670$       D.  $84,670 > 84,760$

**3.** Complete.

- a. 7,866,214,261 rounded to the nearest ten million  $\approx$  \_\_\_\_\_
- b. The numeral that is smaller in the milliard place than 8,579,462,121 is \_\_\_\_\_
- c. Three milliard, six hundred million, thirty eight is estimated to \_\_\_\_\_ by front-end strategy.
- d. A numeral in expanded form that equals 3,456,231,625 is \_\_\_\_\_

- e.  $875,621 < [ \quad \times 100,000 ] + [7 \times 10,000] + [4 \times 1,000] + [6 \times 100]$   
f. The place value would you be rounding if you rounded the number 117,290 to 120,000  
is \_\_\_\_\_

4. Compare. Write ( $>$ ,  $<$  or  $=$ ).

- a.  $1,000,000,000 \square 999,999,999$
- b.  $3,000,000,000 + 50,000,000 + 700,000 + 500 + 7 \square$  Three milliard, five hundred million, thirty.
- c. 8,000 million  $\square$  8 milliard.
- d. Fifteen million, three hundred twenty-five thousand, thirteen  $\square$   $(1 \times 10,000,000) + [5 \times 1,000,000] + [2 \times 1,000] + [5 \times 100] + [3 \times 10]$

5. Sara rounded a number to the nearest Ten and got 460. What could her original number have been?

6. Find all of the digits that can replace \_\_\_\_\_.

$$7 \mid 3,562 > 753,562$$

7. Write each of the following numerals in standard form and arrange the numerals in a descending order.

- Four hundred thirty-four thousand, eight hundred thirty-one
- 434,381
- $[4 \times 100,000] + [3 \times 10,000] + [4 \times 100] + [9 \times 10] + [3 \times 1]$
- $400,000 + 40,000 + 3,000 + 800 + 30 + 5$

Standard form	Descending order

8. Write a numeral that is less in the Hundred Millions place than 632,714,000

9. Write five numbers that round to 785,000

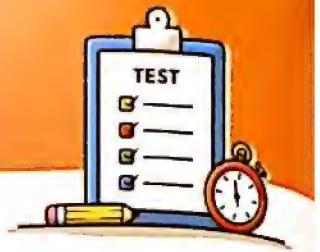
10. What is the largest number that can be rounded to 3,700 when rounded to the nearest hundred?

11. Write a numeral that is greater than 3,456,462,570 and a numeral that is less than 3,456,462,570 and write the three numeral in an ascending order.

12. Use front-end estimation for the following numbers

- a. 6,627,513,202
- b. one hundred sixty-three million, four hundred fifty thousand, nine hundred four.

## Unit One Assessment



### 1. Choose the correct answer.

- a. The largest 5-digit number is \_\_\_\_\_  
A. 10,000      B. 100,000      C. 99,999      D. 98,765
- b. How many digits does the numeral 314,562,430 have ?  
A. 5      B. 6      C. 8      D. 9
- c. What is the standard form for three milliard, seven hundred thirty-five thousand,fifty?  
A. 3,735,000,050      B. 3,735,500  
C. 3,000,735,050      D. 3,735,050
- d. Which is the compose to  $[8 \times 100,000] + [4 \times 1,000] + [7 \times 100] + [1 \times 10]$ ?  
A. 804,710      B. 840,710      C. 804,170      D. 840,701
- e. 3,752,000 \_\_\_\_\_ three milliard,twenty  
A. >      B. <      C. =
- f. Which number round to 5,000,000 when rounded to the nearest million ?  
A. 4,754,216      B. 4,261,562  
C. 5,642,721      D. 5,810,000

### 2. Complete the following.

- a. The value of the digit 4 in the number 3,452,631,901 is \_\_\_\_\_
- b. 1,732,053,000 in word form is \_\_\_\_\_
- c. \_\_\_\_\_ is 100 times greater than four hundred thousand.
- d.  $735,462 \approx$  \_\_\_\_\_ [Rounded to the nearest ten thousand]
- e. 3,504,800,501 in expanded form  
is \_\_\_\_\_
- f.  $5,856,469 \approx 5,900,000$  [Rounded to the nearest \_\_\_\_\_ ]

**3.** Put ( $\checkmark$ ) to the correct answer and (X) to the incorrect answer.

- a. [5 thousands and 9 hundreds]  $\times 10 = 59,000$  ( )
- b.  $30,000 + 7,000 + 30 + 4 = 3734$  ( )
- c. The compose of number  $[8 \times 100,000] + [5 \times 1,000] + [5 \times 100] + [4 \times 10]$  is 85,540 ( )
- d.  $500,000 + 20,000 + 30 + 4 > 90,000 + 8,000 + 60 + 9$  ( )
- e. 1,854,623 estimate to 1,000,000 by front-end strategy. ( )
- f. The smallest 5-different digits number is 12345 ( )

**4.** Match the cards that have the same number.

- |  |   |
|--|---|
| a. $[7 \times 10,000] + [4 \times 100] + [8 \times 10] + [9 \times 1]$ | 1. seven milliard, four hundred million, eight hundred ninety |
| b. 7,400,000,890   | 2. seven million, four hundred thousand, eighty-nine          |
| c. $7,000,000 + 400,000 + 80 + 9$                                      | 3. 7,000,040,890  |
| d. 7 milliard, 40 thousand, 890  | 4. seventy thousand, four hundred eighty-nine                 |

- 5.** In the number 59,492 how many times greater is the digit in the Thousands place than the digit in the Tens place ?

- 6.** Use the digits 7,4,2,0,3,5,6,8 to make the greatest number you can.

Then use the same digits to make the smallest number you can and round each number to the nearest Million.

- 7.** Write a number that could be rounded to 780,000 when rounded to the nearest Ten Thousand.

8. Arrange in an ascending order, using the forms in which the numbers are written.

- $[7 \times 1,000,000] + [5 \times 100,000] + [4 \times 1,000] + [2 \times 100] + [3 \times 10]$
- Seven million, five hundred forty thousand, two hundred three.
- $7,000,000 + 500,000 + 40,000 + 2,000 + 3$
- 75,423
- Seven million, fifty thousand, thirty.

9. Write the place value of the digit 5 in each of the following numbers.

- a. 157,321,462      b. 5,463,002,127

10. Complete the following.

composed : 2,734,561,421

Decomposed :

Milliards	Millions			Thousands			Ones		
0	H	T	O	H	T	O	H	T	O
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—

11. Round 664,418

- a. to the nearest ten —————
- b. to the nearest ten thousand —————

12. Write a numeral that is less in the Hundred Thousands place

than 3,785,462,594

UNIT  
**2**

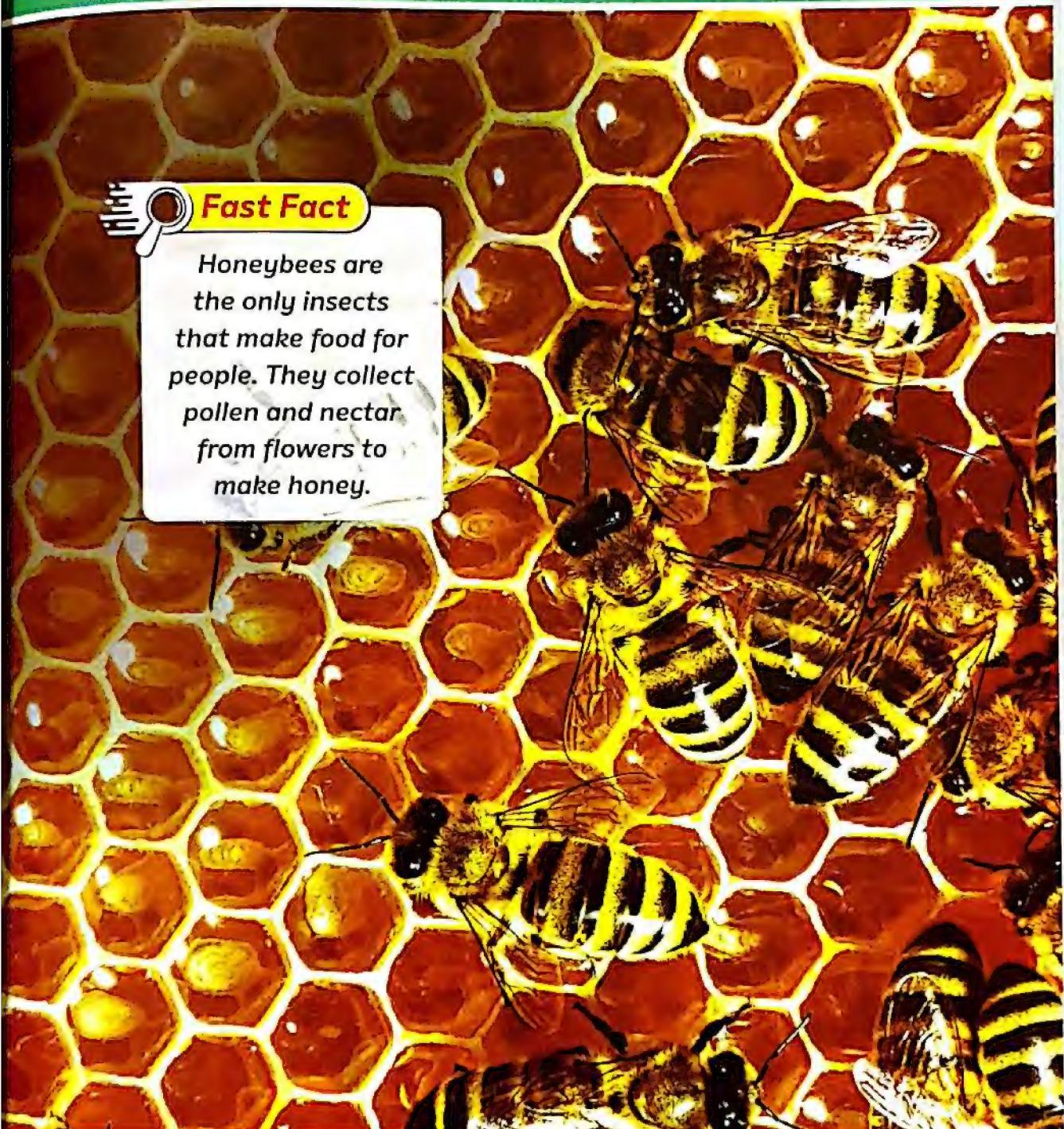
# Addition and Subtraction Strategies

» **Concept 1:** Using addition and subtraction strategies

» **Concept 2:** Solving multistep problems

## Fast Fact

Honeybees are the only insects that make food for people. They collect pollen and nectar from flowers to make honey.



Concept

1

# Using Addition and Subtraction Strategies



## Fast Fact

*There are over 12,000 ant species worldwide.*

*There are about 20,000 different species of bees in the world.*

*What is the difference between them ?!*





## Concept Overview

### In concept 1:

Using Addition and Subtraction Strategies, students review and explore addition and subtraction strategies, including mental math strategies and the standard addition and subtraction algorithms. This work helps prepare students for working with larger numbers and provides context for the importance of estimating to check the reasonableness of answers. Although instruction in addition and subtraction strategies does not explicitly continue after unit 2, students should continue to practice throughout the year in a variety of contexts, including bare number problems, story problems, math projects, and assessments.

Lesson No.	Lesson Name	Vocabulary Terms	Learning Objectives
Lesson 1	2-1 Properties of Addition	Additive identity property - Associative property - Commutative property	<ul style="list-style-type: none"><li>Students will identify the properties of addition and subtraction.</li><li>Students will explain the properties of addition and subtraction.</li><li>Students will investigate to determine whether addition properties apply to subtraction.</li></ul>
Lesson 2	2-2 Review Mental Math Strategies	Benchmark - Estimate - Mental Math - Round - Subtrahend - Minuend.	<ul style="list-style-type: none"><li>Students will apply a variety of strategies to add and subtract mentally.</li><li>Students will explain the importance of mental math skills.</li></ul>
Lesson 3	2-3 Addition with Regrouping	Algorithm	<ul style="list-style-type: none"><li>Students will add multi-digit whole numbers.</li><li>Students will estimate to determine if their answer is reasonable.</li></ul>
Lesson 4	2-4 Subtraction Strategies	Difference - Subtrahend - Minuend	<ul style="list-style-type: none"><li>Students will use decomposition of numbers to subtract multidigit whole numbers.</li><li>Students will explain the importance of finding patterns and relationships in mathematics.</li></ul>
	2-5 Subtraction with Regrouping	Algorithm - Regroup	<ul style="list-style-type: none"><li>Students will use place value to help subtract using the standard algorithm.</li><li>Students will subtract with regrouping.</li><li>Students will estimate to check the reasonableness of their answers.</li></ul>

# Lesson 1

## 2-1 Properties of Addition

### Learn What is the addition properties ?

Addition properties are rules for addition that are always true.

- Commutative property.
- Identity property.
- Associative property.

#### Commutative Property of Addition

Maged saw 9 birds on Monday and 5 birds on Tuesday.

How many birds did he see in all ?



You can add numbers in any order and get the same sum.

 $9$	$+$	 $5$	$=$	$14$
$\uparrow$ addend	$\uparrow$ addend	$\uparrow$ $=$ sum		
 $5$	$+$	 $9$	$=$	$14$
$\uparrow$ addend	$\uparrow$ addend	$\uparrow$ $=$ sum		

So,  $9 + 5 = 5 + 9$ . Maged saw 14 birds.

#### Identity Property of Addition

Maged saw 8 fish. Shady did not see any. How many fish did the boys see in all?

If you add zero to any number, the sum is that number.

$$8 + 0 = 8$$

$$0 + 8 = 8$$

So, the boys saw 8 fish in all.

#### Associative Property of Addition

Maged collected 7 brown shells, 4 white shells, and 6 gray shells.

How many shells did he collect in all ?

You can group addends in different ways, and the sum will be the same.

$$\begin{array}{rcl}
 [7 + 4] & + & 6 \\
 = & 11 & + 6 \\
 = & 17 &
 \end{array}
 \quad \mid \quad
 \begin{array}{rcl}
 7 & + & [4 + 6] \\
 = & 7 & + 10 \\
 = & 17 &
 \end{array}$$

So,  $(7 + 4) + 6 = 7 + (4 + 6)$ .

Maged collected 17 shells in all.

**MATH IDEA**  
Parentheses ( ) show which numbers to add first.

#### Notes for parents :

- Let your child give you more examples for each property and ask him/her to explain what each property states.

**Example 1**

Find the missing number, and name the property you used:

a.  $12 + 64 = \underline{\hspace{2cm}} + 12$

b.  $14 = 0 + \underline{\hspace{2cm}}$

c.  $[1 + 19] + 11 = 1 + [19 + \underline{\hspace{2cm}}]$

d.  $90 + \underline{\hspace{2cm}} = 90$

**Solution**

a. 64 (commutative property)

b. 14 (additive identity property)

c. 11 (associative property)

d. 0 (additive identity property)

**Example 2**

Solve each problem, and name the property you used:

a.  $12 + 28 + 30$

b.  $16 + 9 + 4$

c.  $12 + 28 + 15 + 35$

**Solution**

a.  $12 + 28 + 30$  Use the associative  
 $= [12 + 28] + 30$  property to group  
 $\downarrow$   
 $= 40 + 30$  numbers that are  
 $= 70$  easy to add mentally.

b.  $16 + 9 + 4$   
 $= 16 + 4 + 9$  (commutative property)  
 $= [16 + 4] + 9$  (associative property)  
 $= 20 + 9 = 29$

c.  $12 + 28 + 15 + 35$

$= [12 + 28] + [15 + 35]$  (associative property)

$= 40 + 50 = 90$

**Check your understanding**

Solve the problems, then name the property or properties illustrated by each problem

(commutative, associative or additive identity)

a.  $[8 + 2] + 6 = \underline{\hspace{2cm}}$

Property: \_\_\_\_\_

b.  $7,635 + 0 = \underline{\hspace{2cm}}$

Property: \_\_\_\_\_

c.  $39 + [20 + 40] = \underline{\hspace{2cm}}$

Property: \_\_\_\_\_

d.  $17 + 23 + 3 = \underline{\hspace{2cm}}$

Property: \_\_\_\_\_

e.  $136 + 37 + 13 + 14 = \underline{\hspace{2cm}}$

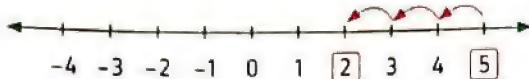
Property: \_\_\_\_\_

• Let your child know that he/she could use more than one property to solve a problem.

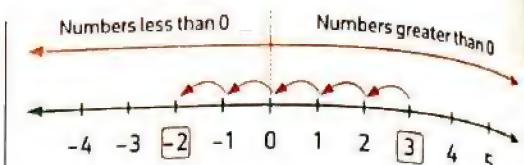
## Do the addition properties apply to subtraction?

- Is  $5 - 3$  the same as  $3 - 5$ ?

You can use the number line to answer.



$$5 - 3 = 2$$



$$3 - 5 = -2 \text{ (number less than 0)}$$

The differences are NOT the same

You can not subtract numbers in any order and get the same difference.

So, commutative property of addition *does not apply* to subtraction.

- Subtraction has no identity.

There is no number you can subtract from any number, or subtract any number from it, the difference is that number.

- Is  $[5 - 3] - 2$  the same as  $5 - (3 - 2)$ ?

$$[5 - 3] - 2 = 2 - 2$$

$$= 0$$

$$5 - [3 - 2] = 5 - 1$$

$$= 4$$

The differences are NOT the same

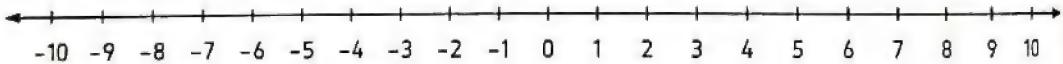
You can not group in different ways, and the difference will be the same.

So, associative property of addition *does not apply* to subtraction.



### Check your understanding

Choose one property of addition and explain why does not apply to subtraction and give an example. Use the number line to help subtract.



#### Notes for parents :

- Ask your child to create a subtraction problem to investigate if the addition properties apply to subtraction.
- Let your child explain using words.

# Exercise 7

## 2-1 Properties of Addition

REMEMBER

UNDERSTAND

ACT

PROBLEM SOLVING

From the school book

1. Complete each number sentence. Name the property you used.

a.  $24 + 99 = \underline{\hspace{2cm}} + 24$

c.  $[6 + 4] + 36 = 6 + [4 + \underline{\hspace{2cm}}]$

e.  $68 + \underline{\hspace{2cm}} = 76 + 68$

g.  $[4 + 9] + 2 = \underline{\hspace{2cm}} + 2$

b.  $152 + 0 = \underline{\hspace{2cm}}$

d.  $3 + [3 + \underline{\hspace{2cm}}] = [3 + 3] + 1$

f.  $\underline{\hspace{2cm}} + 90 = 90$

h.  $14 + 8 = 8 + \underline{\hspace{2cm}}$

2. Choose the correct property.

- a.  $[12 + 8] + 7 = 12 + [8 + 7]$  [Additive identity - Commutative - Associative]  
 b.  $9 + 21 = 21 + 9$  [Additive identity - Commutative - Associative]  
 c.  $[45 + 5] + 10 = 45 + [5 + 10]$  [Additive identity - Commutative - Associative]  
 d.  $0 + 5,274 = 5,274$  [Additive identity - Commutative - Associative]  
 e.  $26 + 10 + 34 = 26 + 34 + 10$  [Additive identity - Commutative - Associative]

3. Complete to find the sum.

a.  $15 + 5 = 5 + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$   
 [                  property ]

b.  $2,514 + 0 = \underline{\hspace{2cm}}$   
 [                  property ]

c.  
 $92 + 321 + 8 = 92 + 8 + 321$   
 [                  property ]  
 $= [\underline{\hspace{2cm}} + \underline{\hspace{2cm}}] + 321$   
 [                  property ]  
 $= \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

d.  $1 + 16 + 4$   
 $= 1 + [16 + \underline{\hspace{2cm}}]$   
 [                  property ]  
 $= 1 + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$



7. Solve the problems and circle the property (or properties) you used to solve the problems.  
 ✦ Then, write your own problem showing the same property and using the same numbers.

	Circle one	Problem	Solve	Write your own
a.	Associative Commutative Additive identity	$7 + 3 + 5$		
b.	Associative Commutative Additive identity	$\square 15 + 20 + 13$		
c.	Associative Commutative Additive identity	$\square 40 + 21 + 36$		
d.	Associative Commutative Additive identity	$\square 0 + 4,502$		
e.	Associative Commutative Additive identity	$\square 200 + 0 + 43$		
f.	Associative Commutative Additive identity	$421 + 9 + 29$		

## Challenge

8. Sara needs to find the sum of 24 , 35 , 105 and 66.  
 ✦ How can she group the addends to make it easier to add ?  
 Write the property used in each step.
- 
9. Is  $[540 - 320] + 20$  equal to  $540 - [320 + 20]$  ?  
 ✦ Explain why or why not.

## Multiple Choice Questions

Choose the correct answer.

1. Gamal wrote  $[13 + 7] + 41 = 13 + [7 + 41]$  using the \_\_\_\_\_ property of addition.
- A. additive identity
  - B. commutative
  - C. associative

2. A student wrote the statement using the commutative property of addition.
- A.  $45 + 12 = 45 + 0$
  - B.  $45 + 12 = 12 + 45$
  - C.  $45 + 12 = 57$
  - D.  $45 + 12 = 12 + 57$

3. Which of these statements used commutative property of addition to find  $12 + 55 + 38$ ?
- A.  $[12 + 55] + 38$
  - B.  $12 + [55 + 38]$
  - C.  $12 + 38 + 55$
  - D.  $12 + 55 + 38$

4. Esslam wrote the statement  $[10 + 5] + 20 = [10 + 20] + 5$ . Which properties of addition did he use? (Select two correct answers)
- A. Additive identity
  - B. Commutative
  - C. Associative

5. A student wrote the statement  $65 - 42 = 42 - 65$ . Why is this statement incorrect?
- A. The associative property applies to addition but not subtraction.
  - B. The commutative property applies to addition but not subtraction.
  - C. The associative property applies to subtraction but not addition.
  - D. The commutative property applies to subtraction but not addition.

6. Emad writes  $17 - [9 + 1] = [17 - 9] + 1$ . Is the statement true?
- A. Yes, because the associative property applies to subtraction.
  - B. Yes, because the commutative property applies to subtraction.
  - C. No, because the associative property does not apply to subtraction.
  - D. No, because the commutative property does not apply to subtraction.

7. The additive identity property of addition states that \_\_\_\_\_.
- A. when you add zero to any number, the sum is zero.
  - B. when you add zero to any number, the sum is that number.
  - C. when you add zero to any number, the sum is more than that number.
  - D. when you add zero to any number, the sum is less than that number.

## 2-2 Review Mental Math Strategies

### Learn

Amal picked 88 red apples.

Basma picked 39 green apples.

- How many apples did Amal and Basma pick in all?
- How many apples did Amal pick more than Basma?



Mental math strategies can help you add and subtract.

### Compensation Strategy

Compensation can be used to Make a Benchmark to find the sum of two numbers, and the difference between them mentally.

#### 1. To find $39 + 88$

Add an amount to one number and subtract the same amount from the sum.

$$39 + 88$$



$$39 + 1$$

Add 1 to 39.



$$40 + 88 = 128$$

$128 - 1 = 127$  Subtract 1 from the answer to compensate.

Amal and Basma picked 127 apples.

#### 2. To find $88 - 39$

Add an amount to subtrahend and add the same amount to the difference.

$$88 - 39$$



$$39 + 1 \quad \text{Add 1 to 39.}$$



$$88 - 40 \approx 48$$

$48 + 1 = 49$  Since you subtracted 1 more than you should have, you must add 1 to 48 to compensate.

Amal picked 49 apples more than Basma.

- Let your child recognize the importance of being able to add or subtract using mental math.

**Example 1**

Find each result using mental math:

a.  $255 + 416$

b.  $145 - 17$

**Solution**

a. 
$$\begin{array}{r} 255 \\ + 416 \\ \hline \end{array}$$

Add 4 to 416  
to make 420

$$\begin{array}{r} 255 \\ + 420 \\ \hline 675 \\ - 4 \\ \hline 671 \end{array}$$

subtract 4 to  
compensate for  
adding 4 extra

So,  $255 + 416 = 671$

In a short way:

$255 + 416 = (255 + 420) - 4 = 675 - 4 = 671$

b. 
$$\begin{array}{r} 145 \\ - 17 \\ \hline \end{array}$$

Add 3 to 17  
to make 20Add 3 to  
compensate for  
subtracting  
3 extra

$$\begin{array}{r} 145 \\ - 20 \\ \hline 125 \\ + 3 \\ \hline 128 \end{array}$$

So,  $145 - 17 = 128$

In a short way:

$145 - 17 = (145 - 20) + 3 = 125 + 3 = 128$

**Break Up and Bridge Strategy**

This strategy depends on breaking up numbers into numbers that are easier to add or subtract mentally.

**Example 2**

Find each result using mental math:

a.  $58 + 26$

b.  $78 - 35$

**Solution**

- a. • Break up both numbers into tens and ones.

$58 = 50 + 8$

$26 = 20 + 6$

• Add the tens:  $50 + 20 = 70$

• Add the ones:  $8 + 6 = 14$

• Add the sums:  $70 + 14 = 84$

So,  $58 + 26 = 84$

**Why It works**

$58 + 26$

$(50 + 8) + (20 + 6)$

$(50 + 20) + (8 + 6)$

$70 + 14$

$= 84$

Commutative  
and Associative  
Properties of  
Addition**Another Way**

- Break up only the 26.

$26 = 20 + 6$

• Add 20 to 58:  $58 + 20 = 78$

• Add 6 to 78:  $78 + 6 = 84$

So,  $58 + 26 = 84$

**Notes for parents :**

- Ask your child to find the sum of 39 + 24 mentally and let him/her explain the steps in words.

- b. • Break up both numbers into tens and ones.

$$78 = 70 + 8$$

$$35 = 30 + 5$$

• Subtract the tens:  $70 - 30 = 40$

• Subtract the ones:  $8 - 5 = 3$

• Add the differences:  $40 + 3 = 43$

So,  $78 - 35 = 43$

#### Another Way

- Break up only the 35

$$35 = 30 + 5$$

- Subtract 30 from 78:  $78 - 30 = 48$

- Subtract 5 from 48:  $48 - 5 = 43$

So,  $78 - 35 = 43$

### Add to Subtract Strategy

Add to subtract strategy states that count up from the subtrahend to the minuend.

#### Example 3

Find: a.  $93 - 78$

b.  $254 - 195$

#### Solution

a.  $78 + [2] = 80$

$\swarrow$        $80 + [10] = 90$

$\swarrow$        $90 + [3] = 93$

So,  $2 + 10 + 3 = 15$

Then:  $93 - 78 = 15$

b.  $195 + [5] = 200$

$\swarrow$        $200 + [50] = 250$

$\swarrow$        $250 + [4] = 254$

So,  $5 + 50 + 4 = 59$

Then:  $254 - 195 = 59$

### Front-End Estimation strategy

Front-End Estimation states that add or subtract only the largest place values in each number to produce an estimate [that may not be close to the actual answer].

#### Example 4

Estimate to find the results: a.  $573 + 228$

b.  $176 - 82$

#### Solution

a.  $573 \rightarrow 500$

$+ 228 \rightarrow + 200$

$\underline{700}$

b.  $176 \rightarrow 100$

$- 82 \rightarrow - 80$

$\underline{20}$

\* Let your child find  $[276 - 155]$  mentally using at least two strategies and explain the steps.

Rounding Strategy

Rounding strategy states that select one place value for each number. Determine which multiple of 10, 100 or 1,000 (and so on) it is closest to, and then add or subtract for a more accurate estimate.

**Example 5**

Round to find the results: a.  $1,020 + 861$

b.  $267 - 83$

**Solution**

$$\begin{array}{r} \text{a.} \\ 1,020 \xrightarrow{\text{Round to 100}} 1,000 \\ + 861 \xrightarrow{\text{Round to 100}} + 900 \\ \hline 1,900 \end{array}$$

$$\begin{array}{r} \text{b.} \\ 267 \xrightarrow{\text{Round to 10}} 270 \\ - 83 \xrightarrow{\text{Round to 10}} - 80 \\ \hline 190 \end{array}$$

Note that:

*Rounding strategy is a more accurate estimation to the actual results more than front-end estimation strategy.*

**check your understanding**

- Circle which mental math strategy would work best for each problem. Select two problems and solve them.

56 – 48	Compensation	Add to subtract
189 + 32	Add to subtract	Compensation
514 – 497	Add to subtract	Break up and Bridge
92 – 59	Compensation	Front-end estimation
314 + 83	Break up and bridge	Add to subtract
983 + 19	Compensation	Break up and Bridge

- Select one of the mental math strategies. Write an addition problem showing how you use that strategy.

**Notes for parents :**

- Let your child know that front-end estimation and rounding strategy do not give the exact answer.

## Exercise 8

# 2-2 Review Mental Math Strategies

REMEMBER

RIGHT HAND

OPEN

PROBLEM SOLVING

From the school book

1. Solve the problems using the compensate to make a benchmark strategy. Show your work.

a.  $38 + 85$

b.  $\square 43 + 9$

c.  $54 - 17$

d.  $\square 92 - 39$

e.  $333 + 149$

f.  $\square 953 - 499$

2. Solve the problems using the Break Up and Bridge strategy. Show your work.

a.  $713 + 125$

b.  $42 + 27$

c.  $\square 75 + 27$

d.  $44 - 23$

e.  $423 + 213$

f.  $33 - 12$

3. Estimate to find the results. Use Front-End estimation strategy.

a.  $83 - 17$

b.  $123 + 79$

c.  $1,142 - 534$

d.  $709 - 221$

e.  $431 + 376$

f.  $75 - 12$

4. Estimate to find the results. Use rounding strategy.

a.  $168 - 59$

b.  $5,003 - 1,999$

c.  $983 + 141$

d.  $558 + 321$

e.  $7,859 - 2,103$

f.  $3,114 + 510$

5. Add or subtract mentally. Use Add to Subtract strategy. Show your steps.

a.  $284 - 192$

b.  $101 - 98$

c.  $54 - 47$

d.  $76 - 68$

e.  $631 - 589$

f.  $142 - 95$

strategies  
may vary

6. Add or subtract mentally. Tell the strategy you used.

a.  $27 + 31$

b.  $68 - 24$

c.  $116 - 97$

d.  $78 - 15$

e.  $212 + 107$

f.  $352 - 175$

g.  $576 - 391$

h.  $\square 993 + 19$

i.  $674 + 332$

- 7.** On Friday, there were 2,999 people at the museum.  
On Saturday, there were 1,465 people.

Use mental math to find how many people were at the museum during the two days.

Explain your strategy.



- 8.** Andy's dog weighs 45 kilograms. Sally's dog weighs 27 kilograms.

How much more does Andy's dog weigh than Sally's dog? Explain your strategy.



### 9. Writing about Math

- Is Wael's explanation of the steps he used for mental math correct? If not, give the correct answer and explanation.

Find  $565 + 302$ .

$$565 + 5 = 570 \quad \text{I added 5 to 565}$$

$$570 + 302 = 872$$

$$872 + 5 = 877 \quad \text{Then I added 5 to the answer.}$$

Think it through  
I should always check  
to see if my answer is  
reasonable.

## Challenge

- 10.** Add or subtract mentally without writing the results.

Compare. Write ( $>$ ,  $<$  or  $=$ ).

a.  $77 + 13$    $125 - 34$

b.  $47 + 26$    $46 + 28$

c.  $512 - 489$    $75 - 52$

d.  $224 + 176$    $468 - 67$



D

## Multiple Choice Questions

Choose the correct answer.

1. Which answer using front-end estimation strategy to estimate  $69 + 17$ ?  
A.  $60 + 20 = 80$       B.  $70 + 10 = 80$   
C.  $60 + 10 = 70$       D.  $70 + 20 = 90$
2. Which answer using rounding strategy to estimate  $374 - 112$ ?  
A.  $300 - 100 = 200$       B.  $300 - 200 = 100$   
C.  $400 - 100 = 300$       D.  $400 - 200 = 200$
3. Which answer using break up and bridge strategy to find  $87 - 19$ ?  
A.  $87 - 10 = 77$ ,  $77 - 9 = 68$   
B.  $87 - 20 = 67$ ,  $67 + 1 = 68$   
C.  $90 - 20 = 70$   
D.  $90 - 19 = 71$ ,  $71 - 3 = 68$
4. How can  $160 - 69$  be found using compensation strategy?  
A. Subtract  $160 - 60$ , then add 9  
B. Subtract  $160 - 70$ , then add 1  
C. Subtract  $160 - 60$ , then subtract 9  
D. Subtract  $160 - 70$ , subtract 1
5. Which of the following sentences using compensation strategy?  
A.  $73 + 19 = [73 + 20] - 1 = 93 - 1 = 92$   
B.  $73 + 19 = 73 + [10 + 9] = [73 + 10] + 9 = 83 + 9 = 92$   
C.  $73 + 19 = 70 + 10 = 80$   
D.  $73 + 19 = [70 + 10] + [3 + 9] = 80 + 12 = 92$
6. Which of these strategies would be best to help you find the answer of  $25 + 78$  using mental math? Select TWO correct answers.  
A. Round to 30 and 80, then add.  
B. Round to 30 and 80, then subtract.  
C. Use compensation by adding 25 and 75, then adding 3  
D. Use compensation by adding 25 and 75, then subtracting 3  
E. Use break up and bridge by breaking up 25 into 2 and 5 and breaking up 78 into 7 and 8.  
Add  $2 + 7$  and  $5 + 8$ , then add  $9 + 13$ .  
F. Use break up and bridge by breaking up 25 into 20 and 5 and breaking up 78 into 70 and 8.  
Add  $20 + 70$  and  $5 + 8$ , then add  $90 + 13$ .

## Lesson

# 3

# 2-3 Addition with Regrouping

## Learn

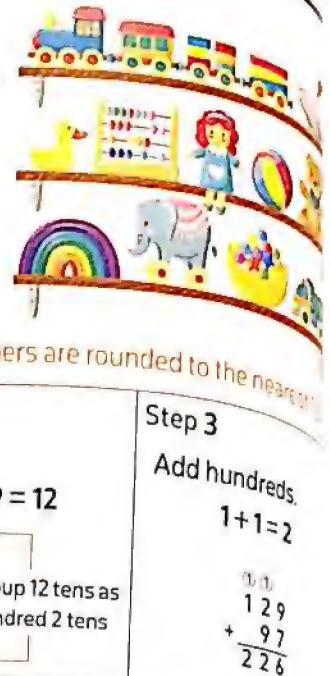
Mr. Faried has a large collection of kids toys. He has 129 toys. He plans to buy 97 more toys. How many toys will he have altogether?



$$\text{Add. } 129 + 97$$

$$\text{Estimate. } 100 + 100 = 200$$

[numbers are rounded to the nearest]



### Step 1

Add ones.

$$9 + 7 = 16$$

$$\begin{array}{r}
 129 \\
 + 97 \\
 \hline
 6
 \end{array}
 \begin{array}{l}
 \text{Regroup 16 ones} \\
 \text{as 1 ten 6 ones}
 \end{array}$$

### Step 2

Add tens.

$$1 + 2 + 9 = 12$$

$$\begin{array}{r}
 129 \\
 + 97 \\
 \hline
 26
 \end{array}
 \begin{array}{l}
 \text{Regroup 12 tens as} \\
 \text{1 hundred 2 tens}
 \end{array}$$

### Step 3

Add hundreds.

$$1 + 1 = 2$$

$$\begin{array}{r}
 129 \\
 + 97 \\
 \hline
 226
 \end{array}$$

Mr. Faried will have 226 toys, and the answer is close to the estimate. So, 226 is reasonable.

## Example 1

Round the addends to the nearest given estimation. Find the sum.

a.  $34 + 88$

[Round to the nearest 10]

b.  $658 + 135$

[Round to the nearest 100]

c.  $5,195 + 3,761$

[Round to the nearest 1,000]

## Solution

a.

$$\begin{array}{r}
 \text{① Round to} \\
 34 \xrightarrow{10} 30 \\
 + 88 \xrightarrow{10} + 90 \\
 \hline
 122 \quad 120
 \end{array}$$

The answer is reasonable.

b.

$$\begin{array}{r}
 \text{① Round to} \\
 658 \xrightarrow{100} 700 \\
 + 135 \xrightarrow{100} + 100 \\
 \hline
 793 \quad 800
 \end{array}$$

The answer is reasonable.

c.

$$\begin{array}{r}
 \text{① Round to} \\
 5,195 \xrightarrow{1,000} 5,000 \\
 + 3,761 \xrightarrow{1,000} + 4,000 \\
 \hline
 8,956 \quad 9,000
 \end{array}$$

The answer is reasonable.

## Notes for parents :

- Ask your child to find the sum of 3,659 and 1,783, then use rounding to estimate and check if the answer is reasonable or not.

**Example 2**

Estimate using rounding to the nearest Ten Thousands, Thousand, Hundreds and Tens to check the reasonableness of the answer. Find the exact answer.

$$12,548 + 48,681$$

**Solution**

Round to nearest 10,000,

$$\begin{array}{r} 10,000 \\ + 50,000 \\ \hline 60,000 \end{array}$$

Round to nearest 1,000,

$$\begin{array}{r} 13,000 \\ + 49,000 \\ \hline 62,000 \end{array}$$

Round to nearest 100 ,

$$\begin{array}{r} 12,500 \\ + 48,700 \\ \hline 61,200 \end{array}$$

Round to nearest 10 ,

$$\begin{array}{r} 12,550 \\ + 48,680 \\ \hline 61,230 \end{array}$$

Exact answer

$$\begin{array}{r} 12,548 \\ + 48,681 \\ \hline 61,229 \end{array}$$

**Notes**

The exact answer is more reasonable to estimation using rounding to the nearest Ten than rounding to the nearest other place values.

**Check your understanding**

Find the exact sum. Estimate using rounding to check the reasonableness of the answer.

a.  $319 + 63$  Round to 100 → \_\_\_\_\_

Round to other available place value to check \_\_\_\_\_

$$\begin{array}{r} 319 \\ + 63 \\ \hline \end{array}$$

$$\begin{array}{r} \\ \\ \end{array}$$

b.  $2,723 + 3,286$  Round to 1,000 → \_\_\_\_\_

$$\begin{array}{r} 2,723 \\ + 3,286 \\ \hline \end{array}$$

$$\begin{array}{r} \\ \\ \end{array}$$

c.  $42,401 + 17,923$  Round to 10,000 → \_\_\_\_\_

$$\begin{array}{r} 42,401 \\ + 17,923 \\ \hline \end{array}$$

$$\begin{array}{r} \\ \\ \end{array}$$

\* Let your child creates an addition problem and let him/her solve it to find the exact answer, then use rounding to check the reasonableness of the answer.

## Exercise

# 9

## 2-3 Addition with Regrouping

REMEMBER

UNDERSTAND

APPLY

PROBLEM SOLVING

From the school book

1. Estimate using rounding to the nearest Ten. Find the exact answer.

a.

$$\begin{array}{r} 19 \\ + 32 \\ \hline \end{array}$$

b.

$$\begin{array}{r} 351 \\ + 286 \\ \hline \end{array}$$

c.

$$\begin{array}{r} 1,578 \\ + 4,121 \\ \hline \end{array}$$

d.

$$\begin{array}{r} 73,427 \\ + 12,848 \\ \hline \end{array}$$

2. Estimate using rounding to the nearest Hundred. Find the exact answer.

a.

$$\begin{array}{r} 726 \\ + 89 \\ \hline \end{array}$$

b.

$$\begin{array}{r} 134 \\ + 588 \\ \hline \end{array}$$

c.

$$\begin{array}{r} 6,836 \\ + 1,982 \\ \hline \end{array}$$

d.

$$\begin{array}{r} 34,762 \\ + 21,384 \\ \hline \end{array}$$

3. Estimate using rounding to the nearest Thousand. Find the exact answer.

a.

$$\begin{array}{r} 3,355 \\ + 809 \\ \hline \end{array}$$

b.

$$\begin{array}{r} 26,721 \\ + 45,398 \\ \hline \end{array}$$

c.

$$\begin{array}{r} 85,632 \\ + 1,168 \\ \hline \end{array}$$

d.

$$\begin{array}{r} 25,441 \\ + 56,887 \\ + 13,456 \\ \hline \end{array}$$

4. Round to estimate the sums. Then, solve the problems to find the exact answer. Show your work.

a.

$$\begin{array}{r} 28 \\ + 54 \\ \hline \end{array}$$

b.

$$\begin{array}{r} 593 \\ + 194 \\ \hline \end{array}$$

c.

$$\begin{array}{r} 579 \\ + 62 \\ \hline \end{array}$$

d.

$$\begin{array}{r} 3,520 \\ + 2,401 \\ \hline \end{array}$$

e.

$$\begin{array}{r} 3,975 \\ + 8,062 \\ \hline \end{array}$$

f.

$$\begin{array}{r} 2,227 \\ + 181 \\ \hline \end{array}$$

g.

$$\begin{array}{r} 8,049 \\ + 6,199 \\ \hline \end{array}$$

h.

$$\begin{array}{r} 6,732 \\ + 2,351 \\ \hline \end{array}$$

i.

$$\begin{array}{r} 2,549 \\ + 49,879 \\ \hline \end{array}$$

j.

$$\begin{array}{r} 34,013 \\ + 9,340 \\ \hline \end{array}$$

k.

$$\begin{array}{r} 63,456 \\ + 26,544 \\ \hline \end{array}$$

l.

$$\begin{array}{r} 368,547 \\ + 491,428 \\ \hline \end{array}$$

## 5. Find the exact sum. Estimate using rounding as the examples.

► Examples: •  $5,432 + 1,296 = 6,728$   
 $\downarrow \quad \downarrow$   
 $5,400 + 1,300 = 6,700$

•  $17,686 + 5,342 = 23,028$   
 $\downarrow \quad \downarrow$   
 $17,690 + 5,340 = 23,030$

a.  $17 + 69 =$   
 $\_ + \_ =$

c.  $973 + 281 =$   
 $\_ + \_ =$

e.  $3,728 + 544 =$   
 $\_ + \_ =$

g.  $86,532 + 6,559 =$   
 $\_ + \_ =$

i.  $25,749 + 175,684 =$   
 $\_ + \_ =$

k.  $123,965 + 986,035 =$   
 $\_ + \_ =$

b.  $523 + 387 =$   
 $\_ + \_ =$

d.  $1,492 + 48 =$   
 $\_ + \_ =$

f.  $4,584 + 2,428 =$   
 $\_ + \_ =$

h.  $69,210 + 26,428 =$   
 $\_ + \_ =$

j.  $259,111 + 9,999 =$   
 $\_ + \_ =$

l.  $58,712 + 81,475 + 42,358 =$   
 $\_ + \_ + \_ =$

6. Find the sum. Compare using ( $>$ ,  $<$  or  $=$ ).

a.  $65 + 17$    $38 + 43$

c.  $3,984 + 1,079$    $894 + 4,117$

e.  $90,652 + 21,911$    $37,888 + 84,675$

b.  $290 + 530$    $732 + 88$

d.  $5,182 + 957$    $3,777 + 2,350$

f.  $54,186 + 11,983$    $25,649 + 40,515$

## 7. Round to estimate the sum. Then solve the problems and find the exact sum.

Show your steps.

a. Sandra collected 139 cans to recycle.

► Hani collected 242 cans.

How many cans were collected.

Round to the nearest Ten.

Estimate:

Exact:



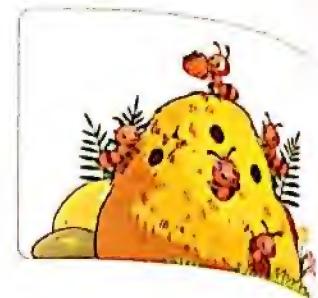
- b. A colony of ants is on a march through the jungle looking for food. On this march they made 2 bridges. The first bridge is composed of 142 ants. The second bridge is composed of 165 ants.

How many ants were there in both bridges ?

Show your work. Then, explain how you know your answer is reasonable.

**Estimate :** \_\_\_\_\_

**Exact :** \_\_\_\_\_



- c. Abeer and Ehab are traveling from Aswan to Alexandria. They will travel 514 km on the first day to Asyut. They will travel 597 km from Asyut to Alexandria on the second day. How many kilometers will they travel in all ?



**Estimate :** \_\_\_\_\_

**Exact :** \_\_\_\_\_

- d. A Saharan silver ant is the fastest ant on the planet. It can move about 855 mm a second. If this ant could maintain this speed for 2 seconds, how far would it go ?



**Estimate :** \_\_\_\_\_

**Exact :** \_\_\_\_\_

- e. A factory produced 7,560 toys in one month. If the factory produced the same number each month. How many toys were produced in two months ? Round to the nearest Thousand.



**Estimate :** \_\_\_\_\_

**Exact :** \_\_\_\_\_

- f. In a week 6,923 tourists visited Karnak temple, and in the next week 7,679 tourists visited it.

How many tourists visited the temple in the two weeks?

Round to the nearest Ten.



**Estimate:**

**Exact:**

---

- g. The number of spectators in three successive matches of the Egyptian team in Cairo stadium were 17,846, 48,928 and 32,135.

Find the total number of spectators in the three matches.

Round to the nearest Ten Thousands.



**Estimate:**

**Exact:**

---

## Challenge

8. Complete the missing digits.

a.

$$\begin{array}{r}
 7 \quad \square, \quad 3 \quad 4 \quad \square \\
 + \quad \square \quad 2, \quad \square \quad 2 \quad 5 \\
 \hline
 9 \quad 8, \quad 6 \quad \square \quad 8
 \end{array}$$

b.

$$\begin{array}{r}
 \square \quad 0, \quad 1 \quad \square \quad \square \\
 + \quad 1 \quad \square, \quad \square \quad 2 \quad 5 \\
 \hline
 3 \quad 7, \quad 6 \quad 4 \quad 8
 \end{array}$$

c.

$$\begin{array}{r}
 4, \quad 7 \quad 1 \quad 4 \\
 + \quad \square, \quad 4 \quad \square \quad 5 \\
 \hline
 8, \quad \square \quad 6 \quad \square
 \end{array}$$

d.

$$\begin{array}{r}
 2 \quad \square, \quad 3 \quad 8 \quad \square \\
 + \quad \square \quad 9, \quad 5 \quad \square \quad 4 \\
 \hline
 8 \quad 4, \quad \square \quad 2 \quad 5
 \end{array}$$

9. Round to estimate to check the reasonableness of your answer. Find the exact sum.

$$44,536 + 18,312 + 22,305 + 10,943$$

## Multiple Choice Questions

Choose the correct answer.

- 1.** Which one is the sum of  $352 + 269$  ?

A. 117      B. 118  
C. 621      D. 622

- 3.** Which one is the correct rounding to estimate the answer to  $192 + 266$  ?  
 A.  $100 + 200 = 300$   
 B.  $200 + 200 = 400$   
 C.  $100 + 300 = 400$   
 D.  $200 + 300 = 500$

- 5.** Which one is the sum of  $4,568 + 2,715$  ?

A. 2,253      B. 6,283  
C. 7,273      D. 7,283

- 7.**  $3,425 + 4,768 = 193 +$  \_\_\_\_\_  
 A. 8      B. 80  
C. 800      D. 8,000

- 9.** Which has the same sum as  $654 + 1,698$  ?  
 A.  $519 + 1,832$       B.  $1,394 + 958$   
 C.  $1,863 + 571$       D.  $754 + 1,898$

- 11.** Heba bought a laptop for 13,350 pounds and a TV set for 8,750 pounds.  
What is the total money did she pay ?  
 A. 21,000 pounds      B. 21,100 pounds  
C. 22,100 pounds      D. 23,000 pounds

- 13.** Which of the following estimations could be used to check  $29,828 + 41,309 = 71,137$  is reasonable ?  
 A.  $20,000 + 40,000 = 60,000$   
 B.  $20,000 + 50,000 = 70,000$   
 C.  $30,000 + 40,000 = 70,000$   
 D.  $30,000 + 50,000 = 80,000$

- 2.** Which one is the rounding to the nearest Hundred of 3,783 ?

A. 3,780      B. 3,800  
C. 3,880      D. 4,000

- 4.** Which one is the correct rounding to estimate the sum of  $1,564 + 387$ ?  
 A.  $1,500 + 300 = 1,800$   
 B.  $1,500 + 400 = 1,900$   
 C.  $1,600 + 400 = 2,000$   
 D.  $1,600 + 500 = 2,100$

- 6.** Which one is the sum of  $58,607 + 24,654$  ?

A. 83,053      B. 83,261  
C. 83,361      D. 83,853

- 8.**  $31,632 + 62,435 =$  \_\_\_\_\_  
 A.  $67 + 94$       B.  $67 + 940$   
 C.  $67 + 9,400$       D.  $67 + 94,000$

- 10.**  $78,912$  \_\_\_\_\_  $71,147 + 7,765$   
 A.  $>$   
 B.  $<$   
 C.  $=$

- 12.**  $25,441$   
 + 36,822  
 + 29,789  
 \_\_\_\_\_  
 A. 91,052  
 B. 92,052  
 C. 92,642  
 D. 93,052

- 14.** In a fruit farm, there are 4,275 mango trees and 3,816 orange trees. Which of the following estimations could be used to check the total number of trees is reasonable ?  
 A.  $4,000 + 3,000 = 7,000$   
 B.  $4,000 + 4,000 = 8,000$   
 C.  $5,000 + 3,000 = 8,000$   
 D.  $5,000 + 4,000 = 9,000$

## 2-4 Subtraction Strategies

## 2-5 Subtraction with Regrouping

### Learn Subtraction strategies

On Thursday, the number of the metro passengers was 6,543.  
On Friday it was 3,226.

Find the difference between the number of passengers in the two days.

**Subtract:**  $6,543 - 3,226$



#### One Way Counting down using number line with decomposing strategy

To find the difference :  $6,543 - 3,226$  do the following steps :

##### Step 1

- Draw a number line without marks, write the minuend [the greater number] at the right side on the number line.



##### Step 2

- Decompose the subtrahend [the smaller number] in expanded form.

$$3,226 = 3,000 + 200 + 20 + 6$$

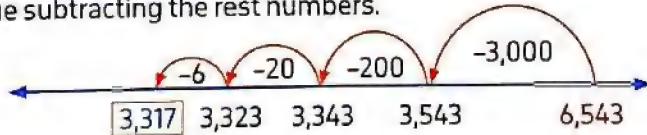
##### Step 3

- Make a hop on the number line to subtract [count down] the highest value in the expanded form. Record the different under the number line.



##### Step 4

- Continue subtracting the rest numbers.



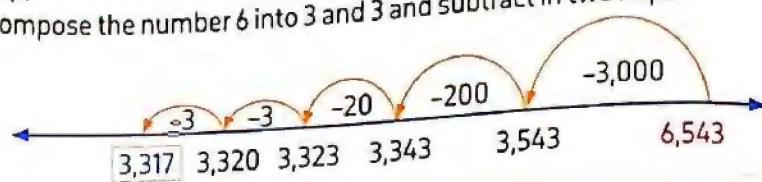
► The difference is the number you got. So,  $6,543 - 3,226 = 3,317$  then, the difference is 3,317 passengers.

- Remind your child how he/she write any number in expanded form. This will help him/her to apply decomposing strategy to subtract.



**Notes**

- In the last hop, you may decompose the number 6 into 3 and 3 and subtract in two hops.

**Another Way** Counting on using number line with decomposing strategy

To find the difference :  $6,543 - 3,226$  do the following steps :

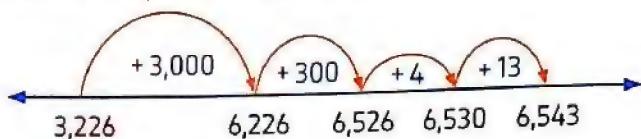
**Step 1**

- Draw a number line without marks, write the subtrahend (the smaller number) at the left side on the number line.

**Step 2**

- Use addition [counting up] and make hops on the number line to get the minuend

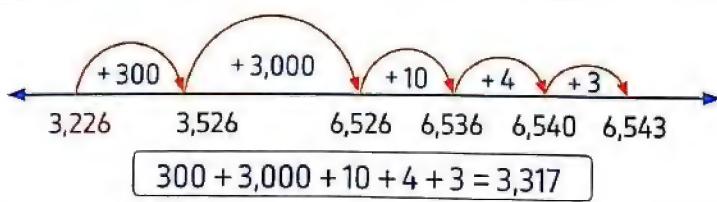
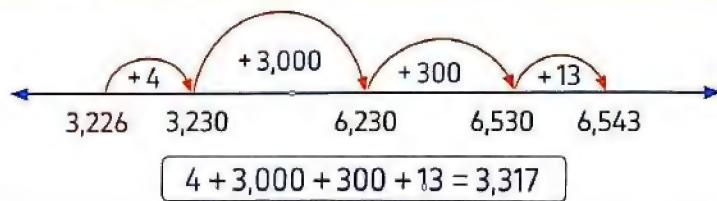
Hint : [You can make different hops with any numbers].

**Step 3**

- Add the numbers above the number line to find the difference.

$$3,000 + 300 + 4 + 13 = 3,317$$

So,  $6,543 - 3,226 = 3,317$

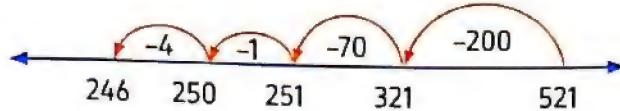
**Different ways to count up****Notes for parents :**

- Let your child choose his/her favorite ways to count up.

**Example 1**

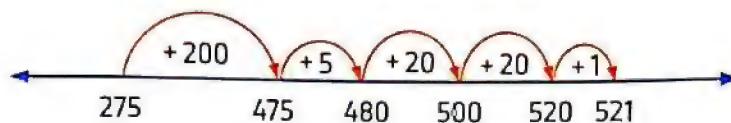
Find the difference.  $521 - 275$

**solution**



$$\text{So, } 521 - 275 = 246$$

Another way



$$\text{So, } 200 + 5 + 20 + 20 + 1 = 246$$



**Check** your understanding

Solve the following problems using a strategy of your choice.

a.  $952 - 687 = \underline{\hspace{2cm}}$



b.  $6,357 - 2,467 = \underline{\hspace{2cm}}$



- Help your child to solve "check your understanding" using any strategy. Ask him/her why he/she choose to answer using this strategy.

## Learn Subtraction with regrouping

A factory produced 3,675 cartoons of juice in a month. In the next month, the factory produced 7,869 cartoons of juice.

Find the difference between the number of cartoon of juice in the two months.

**Subtract:**  $7,869 - 3,675$



**Estimate:**  $8,000 - 4,000 = 4,000$  [Round to the nearest Thousand]



Use the standard subtraction algorithm.

Step 1	Step 2	Step 3	Step 4
Subtract the ones.	Regroup hundreds. Subtract the tens.	Subtract the hundreds.	Subtract the thousands.
$  \begin{array}{r}  7 & 8 & 6 & 9 \\  - 3 & 6 & 7 & 5 \\  \hline  4  \end{array}  $	$  \begin{array}{r}  \overset{7}{\cancel{1}} \overset{16}{\cancel{6}} \\  \overset{7}{\cancel{8}} \overset{16}{\cancel{6}} \overset{9}{\cancel{9}} \\  - 3 \ 6 \ 7 \ 5 \\  \hline  9 \ 4  \end{array}  $	$  \begin{array}{r}  \overset{7}{\cancel{1}} \overset{16}{\cancel{6}} \overset{9}{\cancel{9}} \\  \overset{7}{\cancel{8}} \overset{16}{\cancel{6}} \overset{9}{\cancel{9}} \\  - 3 \ 6 \ 7 \ 5 \\  \hline  1 \ 9 \ 4  \end{array}  $	$  \begin{array}{r}  \overset{7}{\cancel{1}} \overset{16}{\cancel{6}} \overset{9}{\cancel{9}} \\  \overset{7}{\cancel{8}} \overset{16}{\cancel{6}} \overset{9}{\cancel{9}} \\  - 3 \ 6 \ 7 \ 5 \\  \hline  4 \ 1 \ 9 \ 4  \end{array}  $

So, the difference is 4,194 cartoons of juice

The answer is close to the estimate, so 4,194 is reasonable.

Note that :

- If the numbers were rounded to the nearest Hundred to estimate,

$$7,869 - 3,675$$



$$7,900 - 3,700 = 4,200$$
 [it is more closer to the exact answer]

- If the numbers were rounded to the nearest Ten to estimate,

$$7,869 - 3,675$$



$$7,870 - 3,680 = 4,190$$
 [it is more closer to the exact answer than rounding to Thousand and rounding to Hundred]

**Notes for parents :**

- The exact answer is more reasonable to estimation using rounding to the nearest 10 than rounding to the nearest other place values.

**Example 2**

Find the difference. Round to the given estimation to check the reasonableness of the answer.

a.  $531 - 278$  [Round to the nearest Ten]

b.  $7,419 - 1,742$  [Round to the nearest Hundred]

**Solution**

a.

$$\begin{array}{r} 4 \cancel{2} \quad 1 \\ 5 \cancel{3} \quad 1 \\ - 2 \quad 7 \quad 8 \\ \hline 2 \quad 5 \quad 3 \end{array} \xrightarrow{\text{Round to 10}} \begin{array}{r} 4 \quad 1 \cancel{3} \\ 5 \cancel{3} \quad 0 \\ - 2 \quad 8 \quad 0 \\ \hline 2 \quad 5 \quad 0 \end{array}$$

[The answer is reasonable]

b.

$$\begin{array}{r} 6 \cancel{3} \quad 1 \cancel{1} \\ 7 \cancel{4} \quad 1 \cancel{9} \\ - 1 \quad 7 \quad 4 \quad 2 \\ \hline 5 \quad 6 \quad 7 \quad 7 \end{array} \xrightarrow{\text{Round to 100}} \begin{array}{r} 6 \cancel{1} \cancel{4} \\ 7 \cancel{4} \quad 0 \quad 0 \\ - 1 \quad 7 \quad 0 \quad 0 \\ \hline 5 \quad 7 \quad 0 \quad 0 \end{array}$$

[The answer is reasonable]

**Example 3**

Estimate using rounding to the nearest 10, 100, 1,000 and 10,000 to check the reasonableness of the answer. Find the exact difference.  $46,853 - 19,729$

**Solution**

Round to nearest 10:

$$\begin{array}{r} 3 \quad 1 \cancel{6} \\ 4 \cancel{6}, \quad 8 \quad 5 \quad 0 \\ - 1 \quad 9, \quad 7 \quad 3 \quad 0 \\ \hline 2 \quad 7, \quad 1 \quad 2 \quad 0 \end{array}$$

Round to nearest 100:

$$\begin{array}{r} 3 \quad 1 \cancel{6} \\ 4 \cancel{6}, \quad 9 \quad 0 \quad 0 \\ - 1 \quad 9, \quad 7 \quad 0 \quad 0 \\ \hline 2 \quad 7, \quad 2 \quad 0 \quad 0 \end{array}$$

Round to nearest 1,000:

$$\begin{array}{r} 4 \quad 7, \quad 0 \quad 0 \quad 0 \\ - 2 \quad 0, \quad 0 \quad 0 \quad 0 \\ \hline 2 \quad 7, \quad 0 \quad 0 \quad 0 \end{array}$$

Round to nearest 10,000:

$$\begin{array}{r} 5 \quad 0, \quad 0 \quad 0 \quad 0 \\ - 2 \quad 0, \quad 0 \quad 0 \quad 0 \\ \hline 3 \quad 0, \quad 0 \quad 0 \quad 0 \end{array}$$

Exact difference

$$\begin{array}{r} 3 \quad 1 \cancel{6} \quad 4 \quad 1 \cancel{3} \\ 4 \cancel{6}, \quad 8 \quad 5 \quad 3 \\ - 1 \quad 9, \quad 7 \quad 2 \quad 9 \\ \hline 2 \quad 7, \quad 1 \quad 2 \quad 4 \end{array}$$

The exact difference is more reasonable to estimation using rounding to the nearest 10 than rounding to 100, 1,000 or 10,000

**Check**

your understanding

Solve the following problems using the standard subtraction algorithm.

Then, round each number to the nearest Tens, Hundred Thousands or Ten Thousands to check the reasonableness of your answers.

a.  $4,271 - 1,834$

b.  $52,329 - 31,255$

c.  $608,452 - 109,786$

- Remind your child to look at each exercise carefully and decide how he/she needs to regroup before proceeding.

## Exercise 10

### 2-4 Subtraction Strategies

### 2-5 Subtraction with Regrouping

REMEMBER

UNDERSTAND

APPLY

PROBLEM SOLVING

From the school book

1. Solve the following problems using counting down using number line with decomposing strategy.

a.  $841 - 266$



b.  $5,612 - 1,505$



2. Solve the following problems using counting on using number line with decomposing strategy.

a.  $972 - 586$



b.  $6,275 - 3,761$



3. Solve the following problems using a strategy of your choice.

strategies may vary

a.  $\begin{array}{r} 734 \\ - 243 \\ \hline \end{array}$



b.  $\begin{array}{r} 839 \\ - 199 \\ \hline \end{array}$



c.  $\begin{array}{r} 6,245 \\ - 2,400 \\ \hline \end{array}$



d.  $\begin{array}{r} 5,200 \\ - 2,201 \\ \hline \end{array}$



e.  $\begin{array}{r} 27,340 \\ - 18,930 \\ \hline \end{array}$



4. Use the standard subtraction algorithm to solve the problems. Then, round each number to the nearest Thousand to check the reasonableness of your answer.

a. 
$$\begin{array}{r} 9,263 \\ - 3,842 \\ \hline \end{array}$$

b. 
$$\begin{array}{r} 6,625 \\ - 4,417 \\ \hline \end{array}$$

c. 
$$\begin{array}{r} 1,816 \\ - 1,066 \\ \hline \end{array}$$

d. 
$$\begin{array}{r} 5,734 \\ - 3,568 \\ \hline \end{array}$$

e. 
$$\begin{array}{r} 25,884 \\ - 18,875 \\ \hline \end{array}$$

f. 
$$\begin{array}{r} 31,070 \\ - 2,523 \\ \hline \end{array}$$

g. 
$$\begin{array}{r} 46,835 \\ - 19,727 \\ \hline \end{array}$$

h. 
$$\begin{array}{r} 13,524 \\ - 4,786 \\ \hline \end{array}$$

i. 
$$\begin{array}{r} 24,305 \\ - 3,071 \\ \hline \end{array}$$

j. 
$$\begin{array}{r} 23,640 \\ - 14,635 \\ \hline \end{array}$$

k. 
$$\begin{array}{r} 76,053 \\ - 5,296 \\ \hline \end{array}$$

l. 
$$\begin{array}{r} 85,009 \\ - 42,879 \\ \hline \end{array}$$

m. 
$$\begin{array}{r} 62,450 \\ - 46,786 \\ \hline \end{array}$$

n. 
$$\begin{array}{r} 714,523 \\ - 128,104 \\ \hline \end{array}$$

o. 
$$\begin{array}{r} 538,109 \\ - 321,299 \\ \hline \end{array}$$

p. 
$$\begin{array}{r} 865,400 \\ - 22,876 \\ \hline \end{array}$$

q. 
$$\begin{array}{r} 190,123 \\ - 75,425 \\ \hline \end{array}$$

r. 
$$\begin{array}{r} 267,205 \\ - 53,685 \\ \hline \end{array}$$

s. 
$$\begin{array}{r} 680,000 \\ - 124,572 \\ \hline \end{array}$$

t. 
$$\begin{array}{r} 17,900,000 \\ - 2,241,839 \\ \hline \end{array}$$

5. Use the standard subtraction algorithm to solve the following problems. Then round to the nearest Thousands to check the reasonableness of your answer as the examples.

► Examples :  $\begin{array}{r} 4\cancel{1}14 \\ - 5,246 \\ \hline \end{array} - 2,873 = 2,373$   
 $\downarrow \quad \downarrow$   
 $5,000 - 3,000 = 2,000$

$\begin{array}{r} 713,310\cancel{1}2 \\ - 83,402 \\ \hline \end{array} - 58,336 = 25,066$   
 $\downarrow \quad \downarrow$   
 $83,000 - 58,000 = 25,000$

a.  $2,654 - 1,431 = \underline{\hspace{2cm}}$   
 $\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

b.  $3,458 - 2,064 = \underline{\hspace{2cm}}$   
 $\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

c.  $5,487 - 152 = \underline{\hspace{2cm}}$   
 $\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

d.  $7,326 - 5,296 = \underline{\hspace{2cm}}$   
 $\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

e.  $76,452 - 52,131 = \underline{\hspace{2cm}}$   
 $\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

f.  $70,623 - 30,611 = \underline{\hspace{2cm}}$   
 $\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

g.  $32,975 - 18,943 =$   
\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

i.  $58,462 - 286 =$   
\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

k.  $238,763 - 18,764 =$   
\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

m.  $542,302 - 281,976 =$   
\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

h.  $49,438 - 36,776 =$   
\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

j.  $53,670 - 2,558 =$   
\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

l.  $853,004 - 45,878 =$   
\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

n.  $721,010 - 350,891 =$   
\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

6. Find the results, complete using ( $>$ ,  $<$  or  $=$ ).

- |                        |                       |                                 |
|------------------------|-----------------------|---------------------------------|
| a. $849 - 598$         | <input type="radio"/> | $1,000 - 750$                   |
| b. $7,532 - 774$       | <input type="radio"/> | $3,580 - 3,090$                 |
| c. $86,432 - 27,653$   | <input type="radio"/> | $79,493 - 20,715$               |
| d. $18,654 - 367$      | <input type="radio"/> | $10,000 + 8,000 + 200 + 80 + 7$ |
| e. $12,926 + 19,809$   | <input type="radio"/> | $57,400 - 24,865$               |
| f. $469,963 - 159,879$ | <input type="radio"/> | $310,000 + 100$                 |

7. Solve the following story problems using a strategy of your choice.

Follow the orders when rounding to check the reasonableness of your answer.

a. Mona saved 834 pounds in a month. Her sister

Sara saved 468 pounds in the same month.

Find the difference between their savings.

Round to the nearest Ten to estimate.



- b. A farmer collected 9,732 watermelons.  
 • He sold 3,995 pieces. What is the number of left watermelons ?

Round to the nearest Thousands to estimate.

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- c. Eslam needs 1,372 pieces to put his puzzle together. If he has 685 pieces. How many pieces are needed to complete his puzzle ?

Round to the nearest Hundreds to estimate.

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- d. ☑ A trap jaw ant wanted to cross a river that was 3,548 cm across. The ant had already swum 1,672 cm. How much farther does the ant have to go ?
- 
- 
- 
- 



- e. ☑ Two colonies of fire ant were stuck in a flood and made floating rafts to survive. The first colony had approximately 1,267 ants and the second had 3,452 ants. How many more ants were in the second colony ?
- 
- 
- 
- 



- f. The number of births in a governorate in one month was 46,052 births. The number of births in another governorate in the same month was 58,643 births. What is the difference between the number of births in the two governorates? Round to the nearest Thousands to estimate.



- g. A fire ant colony has 255,000 ants. A Gigantiops destructor ant colony has 6,200 ants. What is the difference between the size of the two colonies?



- h. It takes 15,422,140 ants to move a log that weighs 77 kg. It takes approximately 6,350,300 ants to move a rock that weighs 32 kg. How many more ants does it take to move the log than the rock?

Round to the nearest Million to estimate.



## Challenge

2. Write the missing digits.



a.

$$\begin{array}{r}
 & \boxed{\phantom{0}} & 3 & \boxed{\phantom{0}} & 7 \\
 - & 5 & \boxed{\phantom{0}} & 7 & \boxed{\phantom{0}} \\
 \hline
 3 & 0 & 2 & 4
 \end{array}$$

b.

$$\begin{array}{r}
 & \boxed{\phantom{0}} & 3 & 6 & 4 \\
 - & 1 & 2 & \boxed{\phantom{0}} & 5 \\
 \hline
 1 & \boxed{\phantom{0}} & 3 & \boxed{\phantom{0}}
 \end{array}$$

## Multiple Choice Questions

Choose the correct answer.

1. Find the difference  $\underline{\quad 879 \quad} - \underline{\quad 463 \quad}$

- A. 313
- B. 413
- C. 416
- D. 1,342

2. Find the difference  $\underline{\quad 457,206 \quad} - \underline{\quad 124,680 \quad}$

- A. 332,486
- B. 332,526
- C. 333,486
- D. 333,526

3. Which one has the answer 23,837?

- A.  $37,521 - 12,684$
- B.  $36,521 - 12,684$
- C.  $36,521 - 13,684$
- D.  $38,521 - 13,684$

4. Salma solves this problem  $\underline{\quad 2,524 \quad} - \underline{\quad 1,352 \quad}$  What is her next step?

- A. Add 2 and 5 in the tens place.
- B. Subtract 5 from 2 in the tens place.
- C. Regroup the tens place and subtract 5 from 12
- D. Regroup the tens place and subtract 5 from 11

5. Which choice shows how you would correctly use rounding to estimate a reasonable

answer to the problem  $537 - 259$ ?

- A.  $520 - 250 = 270$
- B.  $530 - 240 = 290$
- C.  $540 - 260 = 280$
- D.  $540 - 250 = 290$

6. Amira solved the following problem  $\underline{\quad 6,219 \quad} - \underline{\quad 2,858 \quad}$

Then she checked if her answer was reasonable by estimating. She said that her answer is not reasonable because her estimate is  $6,000 - 2,000 = 4,000$  what did Amira do wrong?

- A. Amira did not regroup correctly. The difference should have been 3,461
- B. Amira did not round 2,858 correctly. The estimate should be  $6,000 - 3,000 = 3,000$
- C. Amira did not round 6,219 correctly. The estimate should be  $7,000 - 2,000 = 5,000$
- D. Amira did not do anything wrong. The estimate is close enough to the answer.

7. A shop sold goods for 54,243 pounds and 34,786 pounds in the next day.

What is the difference between the sales in the two days?

- A.  $54,243 - 34,786 = 20,543$  pounds.
- B.  $54,243 - 34,786 = 19,457$  pounds.
- C.  $54,243 + 34,786 = 88,929$  pounds.
- D.  $54,243 + 34,786 = 89,029$  pounds.

## Concept 1 Assessment | Unit 2



1. Put (✓) to the correct answer and (✗) to the incorrect answer.

- a.  $[18 - 2] + 23 = 18 - [2 + 23]$  [ ]
- b. To subtract  $170 - 79$  mentally, use compensation strategy and subtract  $170 - 80$ , then subtract 1 to find that  $170 - 79$  equals 91 [ ]
- c. The estimate could be used to find  $[9,528 - 3,761 = 5,767]$  is  $9,530 - 3,760 = 5,770$  to check the answer is reasonable. [ ]
- d. A student writes the statement  $87 - 62 = 62 - 87$  because the commutative property applies to subtraction. [ ]
- e. To complete solving the subtraction problem  $\begin{array}{r} 628 \\ - 173 \\ \hline \end{array}$ , you should regroup the Tens place and subtract 7 from 12, then subtract 1 from 5. [ ]
- f.  $25,437 + 37,485 = 62,912$  [ ]

2. Choose the correct answer.

- a.  $2,785 + 0 = 2,785$  is used \_\_\_\_\_ property.  
A. commutative    B. associative    C. additive identity
- b.  $354 + [116 + 243] = [354 + \underline{\hspace{2cm}}] + 243$   
A. 354    B. 116    C. 243    D. 359
- c.  $35,896 + 31,568 \underline{\hspace{2cm}} 82,063 - 14,589$   
A. >    B. <    C. =
- d. Which choice shows how you would correctly use rounding to estimate a reasonable answer to the problem  $726 - 248$ ?  
A.  $720 - 240 = 480$     B.  $720 - 250 = 470$   
C.  $730 - 240 = 490$     D.  $730 - 250 = 480$
- e.  $16 + 27 = 16 + [30 - 3]$ , the used strategy is \_\_\_\_\_  
A. break up and bridge    B. compensation  
C. add to subtract    D. front-end estimation
- f. Find the sum  $\begin{array}{r} 364,731 \\ + 259,189 \\ \hline \end{array}$   
A. 105,542    B. 115,658    C. 623,920    D. 623,930

## 3. Complete.

- a. The estimated sum using rounding to the nearest 10 to find the answer of  $7,346 + 1,983$  is  $\underline{\quad} + \underline{\quad} = \underline{\quad}$  and the exact answer is  $\underline{\quad}$
- b.  $563,200 - 219,876 = \underline{\quad}$
- c. To subtract  $250 - 59$  mentally using compensation, subtract  $\underline{\quad} - \underline{\quad}$  than add  $\underline{\quad}$  to the answer equals  $\underline{\quad}$
- d.  $295,246 - 222,876 = \underline{\quad}$
- e. The difference between 214 and 189 is  $\underline{\quad}$
- f. The sum of 12,985, 36,524 and 10,246 is  $\underline{\quad}$

## 4. Match the cards that have the same answer.

- |                      |                      |
|----------------------|----------------------|
| a. $2,568 + 4,895$   | 1. $42,248 + 35,529$ |
| b. $81,145 - 3,368$  | 2. $1,258 + 6,549$   |
| c. $69,963 - 59,863$ | 3. $8,888 - 1,425$   |
| d. $5,648 + 2,159$   | 4. $8,569 + 1,531$   |

5. Rana found that  $45,378 + 12,861 = 58,239$  then she checked if her answer was reasonable

- by estimating she said that her answer is not reasonable because her estimate is  $46,000 + 13,000 = 59,000$ .

What did Rana do wrong? Describe her error.

## 6. How do you use a number line to find the difference between 532 and 168. Show your

- answer on a number line.

7. Choose one of mental math strategy to solve the problem  $182 + 245$ . Show your steps.8. Show how you use associative and commutative properties to solve  $[23 + 16 + 17]$ .

- Show your steps.

## 9. Nader's salary is 10,250 pounds. He spent 5,575 pounds. Calculate the left money.

- Estimate using rounding to check the reasonableness of the answer.

10. Find the value of  $214 - 79$  mentally. Explain your used strategy.

## 11. A store sold 52,447 toys in a month. If the store sold the same number of toys each month

- Calculate the number of the total sold toys in two months. Estimate using rounding to check the reasonableness of the answer.

12. Youssef wrote  $3,458 - 2,064 = 1,414$  What did Youssef do wrong? Describe his error.

- Estimate using rounding to check the reasonableness of the answer.

Concept

2

# Solving Multistep Problems



## Fast Fact

Female kangaroos sport a pouch on their belly (made by a fold in the skin) to cradle baby kangaroos, called joeys.

If a female weighs 35 kg, and weighs holding her joey 38 kg.  
What is the weight of her joey ?



## Concept Overview

### In concept 2:

Solving Multistep Problems, students review and explore multistep problem-solving strategies, including math modeling strategies. This work helps prepare them for working with larger numbers and provides context for the importance of estimating to check the reasonableness of answers. Although instruction in solving multistep problems continues throughout the course, students focus on fluency of addition and subtraction problems and solving word problems using four functions.



Lesson No	Lesson Name	Vocabulary Terms	Learning Objectives
Lesson 5	2-6 Bar Models, Variables, and Story Problems	Bar model-Variable	<ul style="list-style-type: none"><li>Students will use letters to represent unknown quantities in equations.</li><li>Students will use bar models to represent and solve story problems.</li><li>Solve for the variable in an equation.</li></ul>
Lesson 6	2-7 Solving Multistep Story Problems with Addition and Subtraction	Review vocabulary as needed	<ul style="list-style-type: none"><li>Students will solve multistep story problems.</li><li>Students will explain how they solved multistep story problems.</li></ul>



## Lesson

# 5

# 2-6 Bar Models, Variables, and Story Problems

## Learn

How do you write a number sentence to solve a problem ?

Suppose you had 225 L.E. to spend.  
How much money would you have left if you bought the soccer socks ?

Soccer Gear Sale!	
soccer socks	90 L.E.
Goalie gloves	120 L.E.
shinguards	225 L.E.



## Read and Understand

What do you know ?

You can spend 225 L.E. The socks cost 90 L.E.

What are you trying to find ?

Find how much money you will have left.

## Plan and Solve

What strategy will you use ?

Strategy : Write a Number Sentence using bar models.



To find the missing part :

1. Write a number sentence (or equation).

$$90 + n = 225 \quad (n \text{ shows the money left})$$

2. Subtract to find the part

$$n = 225 - 90$$

$$n = 135$$

Answer : You will have 135 L.E. left.

## Look Back and Check

Is your answer reasonable ?  $90 + 135 = 225$  Yes, it checks

Notes for parents :

- Ask your child why is subtraction used for this problem ? He/she may answer "subtraction is used because I need to find the part that is left".

## Identifying the Main Idea

Identifying the main idea when you read in math can help you use the problem-solving strategy, and write a number sentence.

In reading, identifying the main idea helps you know what the story is about.

In math, the main idea for some word problems is part-part-whole with either a part or the whole unknown.

The main idea here is part-part-whole, with the whole unknown.



Nader spent 7 L.E. in Monday and 8 L.E. in Tuesday.  
How much did he spend in all on both days?



• Equation  $7 + 8 = n$   
Add to find the whole.  
Part    Part    Whole

$$7 + 8 = n$$

Sally had 10 L.E. After she bought a book, she had 4 L.E. left.  
What did the book cost?



• Equation  $n + 4 = 10$   
Subtract to find a part.  
Whole    Part    Part

$$10 - 4 = n$$

The main idea here is part-part-whole, with the one part unknown.



Each picture shows the main idea. The main idea helps you know what number sentence to write.

- If your child has trouble writing number sentences for problems, tell him/her to figure out the main idea in the problem, draw a picture for it, and then decide which operation it calls for.

**Example 1**

There are 5,526 bees in a hive.

In this hive 3,491 are males and the rest are females.

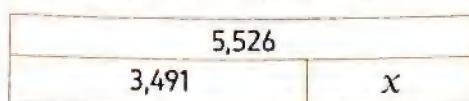
How many females in this hive?

**Solution**

- The whole is : 5,526
- One part is : 3,491 [males]

- The second part is unknown :  $x$  [females]

- Bar model:



- Equation :  $3,491 + x = 5,526$

- <sup>(4.12)</sup> Solution :  $x = 5,526 - 3,491 = 2,035$  females.

How to write a Number sentence (or equation)

Step 1 Show the main idea,

Step 2 Decide which operation fits the main idea

Step 3 Use a letter to show what you are trying to find.

Step 4 Solve the number sentence.

**Note**

You can write many equations for this problem

$$3,491 + x = 5,526$$

,

$$x + 3,491 = 5,526$$

$$5,526 - 3,491 = x$$

or

$$5,526 - x = 3,491$$

The value of  $x$  is the same.

**Check your understanding**

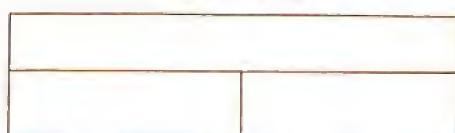
If the number of visitors of the Pyramids in one month is 183,523 and the number of foreign visitors is 38,191

Find the number of Egyptian visitors.

Bar model

Equation : \_\_\_\_\_

Solution : \_\_\_\_\_

**Notes for parents :**

- If your child writes only the answer, ask him/her to reread the directions, and ask him/her to write a number sentence that includes a letter stands for the unknown.

## Learn Solving equations with variables

- An equation is a number sentence stating that two amounts are equal.
- An equation is true if the values on both sides of the equal sign are equal. You solve an equation when you find the value of the variable that makes the equation true.

### Example 2

Solve the equation :  $14 - d = 8$

**Solution** 

• Bar model:

14	
d	8

• Solution :  $d = 14 - 8 = 6$

### Example 3

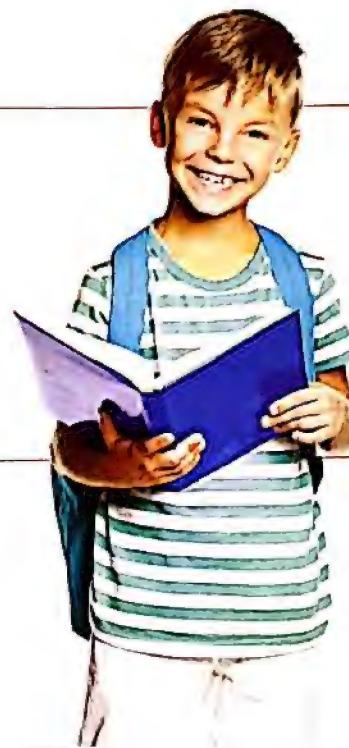
Solve the equation :  $y - 34,500 = 55,200$

**Solution** 

• Bar model:

y	
34,500	55,200

• Solution :  $y = 34,500 + 55,200 = 89,700$



### Example 4

Solve the equation :  $74,562 + m = 125,708$

**Solution** 

• Bar model:

125,708	
74,562	m

• Solution :  $m = 125,708 - 74,562 = 51,146$



**check** your understanding

Solve the following equations.

a.  $x + 54,600 = 87,623$

b.  $76,450 - m = 15,412$

c.  $p - 4,252 = 31,726$

d.  $13,725 + n = 70,000$

\* Ask your child to check his/her answer using fact family.

## Exercise 11

### 2-6 Bar Models, Variables, and Story Problems

REMEMBER

UNDERSTAND

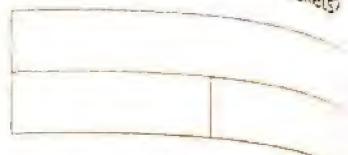
APPLY

PROBLEM SOLVING

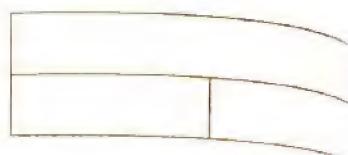
From the school book

1. Complete a bar model. Write an equation. Solve the equation.

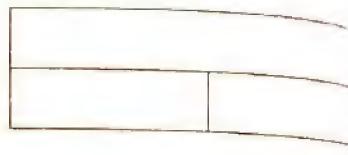
- a. 5 tickets plus some extra tickets are 45 tickets. How many is the number of extra tickets?



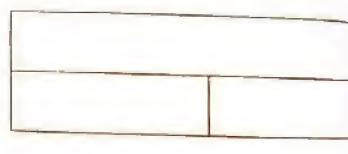
- b. There are some students. Eight students leave. Now there are 24 students. What is the number of all students?



- c. There are 10 dog biscuits in a bowl. After the dogs eat some. There are 3 dog biscuits left. How many dog biscuits did the dogs eat?



- d. A service dog has completed 4 months of its 9 months training program. How many months the dog has left to finish its training?



2. Find the value of each variable in the following part-part whole tables.

a.

x	
34,750	19,051

c.

78,514	
a	29,125

b.

121,725	
10,714	y

d.

m	
41,621	52,321

3. There are 5,328 ants in the colony. In the colony, 2,164 ants are females and the rest are males. How many male ants are in the colony?

Bar model

Equation:

Solution :



4. In colony A there are 1,200 ants. Some ants are out foraging for food and supplies, and 700 ants are taking out the colony's trash. How many ants are foraging for food and supplies?

Bar model

Equation:

Solution :

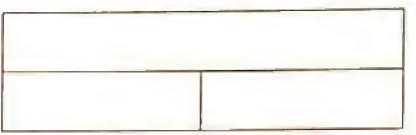


5. Mr Mostafa has written 157 pages of a book. He wants the book to have about 550 pages. How many more pages does he need to write?

Bar model

Equation:

Solution :

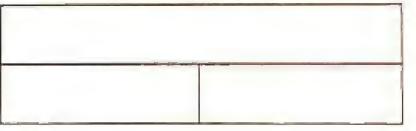


6. There are 12,000 species of ants. Of these 12,000 species, 2,500 species live in Africa and the rest live in other parts of the world. How many species do not live in Africa?

Bar model

Equation:

Solution :

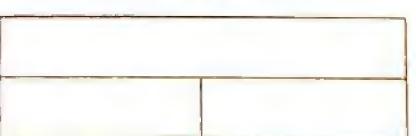


7. The number of boys and girls in a school is 2,340 if the number of boys in this school is 1,234. What is the number of girls in this school?

Bar model

Equation:

Solution :



3. There are 5,328 ants in the colony. In the colony, 2,164 ants are females and the rest are males. How many male ants are in the colony?

Bar model

Equation:

Solution :


4. In colony A there are 1,200 ants. Some ants are out foraging for food and supplies, and 700 ants are taking out the colony's trash. How many ants are foraging for food and supplies?

Bar model

Equation:

Solution :


5. Mr Mostafa has written 157 pages of a book. He wants the book to have about 550 pages. How many more pages does he need to write?

Bar model

Equation:

Solution :


6. There are 12,000 species of ants. Of these 12,000 species, 2,500 species live in Africa and the rest live in other parts of the world. How many species do not live in Africa?

Bar model

Equation:

Solution :


7. The number of boys and girls in a school is 2,340 if the number of boys in this school is 1,234. What is the number of girls in this school?

Bar model

Equation:

Solution :


8. Solve the following equations, create a bar model to solve the following problems.

a.  $m - 4 = 11$

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b.  $a + 9 = 13$

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c.  $12 = 24 - r$

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d.  $8 = 5 + w$

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9. Solving equations with variables. Create a bar model to solve the following problems.

a.  $14,000 - n = 6,000$

Bar model:

Solution :

b.  $m - 35,462 = 2,741$

Bar model:

Solution :

c.  $b - 53,500 = 75,200$

Bar model:

Solution :

d.  $l + 432,750 = 642,781$

Bar model:

Solution :

e.  $725,625 + c = 935,075$

Bar model:

Solution :

f.  $13,280 - d = 5,420$

Bar model:

Solution :

g.  $722,561 - p = 720,231$

Bar model:

Solution :

h.  $f + 205,925 = 810,775$

Bar model:

Solution :

10. Writing About Math. write a story problem involving addition or subtraction, where

you need to find the unknown. Then write the equation and draw a bar model of the equation. Lastly, solve for the variable and check.

Word Problem

Equation

Bar Model (drawn)

Solve and Check

## Challenge

11. Solve the equation by using a bar model.

$$1+1=8$$

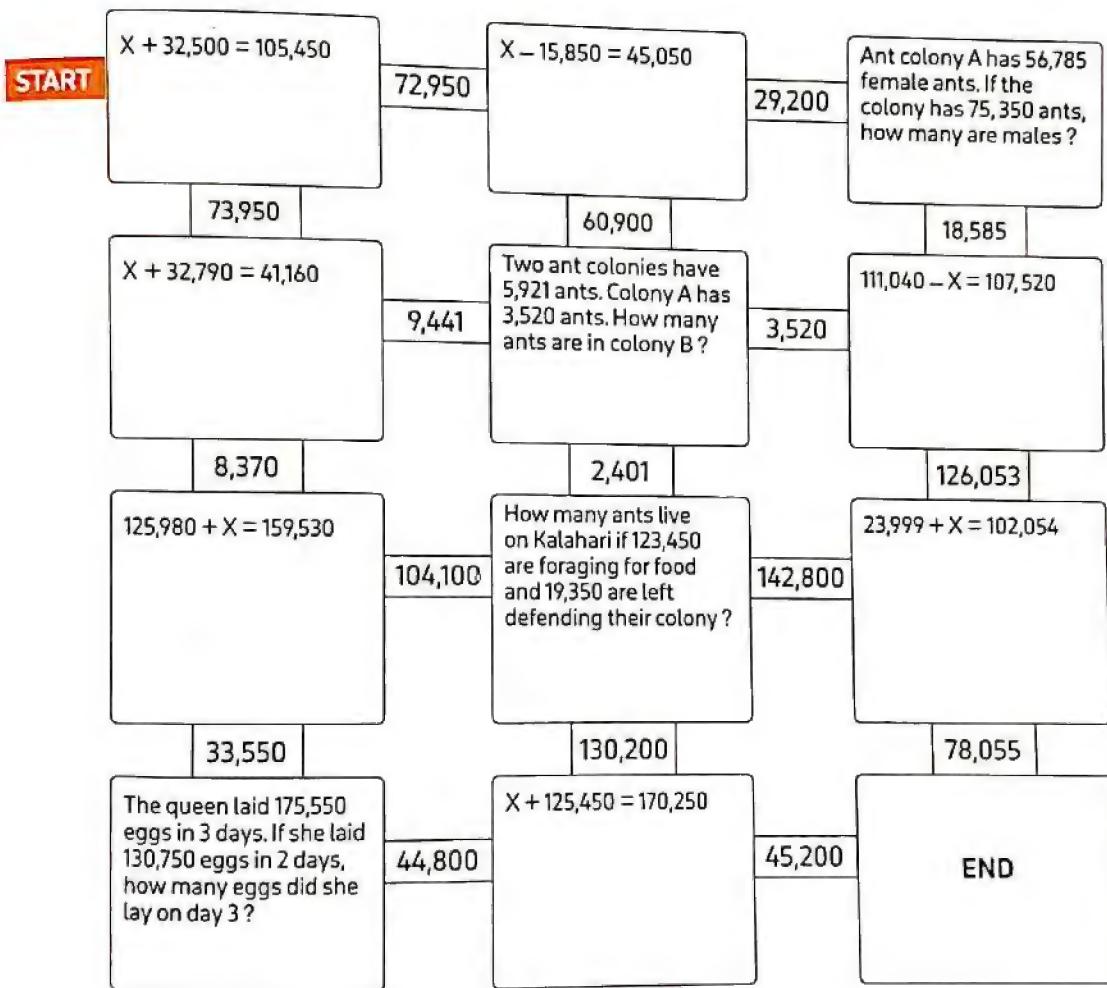


Solution :

12. If  $b = m + 4$  and  $c + m = 7$  find  $m$  and  $c$

## Activity

Your goal is to make it from START to END. Begin in the game space next to START. To move to the next game space, the number in the path MUST be a solution to the game space you are in. You are only required to solve the problems needed to navigate through the puzzle. Use arrows to show the path you took. When you have reached the END, you have completed the maze. Good luck!



## Multiple Choice Questions

Choose the correct answer.

1. If  $24 = x - 8$ , then  $x =$

- A. 20
- B. 8
- C. 32
- D. 10

2. If  $c + 25 = 31$ , then  $c =$

- A. 4
- B. 5
- C. 6
- D. 56

3. If  $32,782 + k = 41,262$ , then  $k =$

- A. 8,562
- B. 8,480
- C. 74,044
- D. 73,916

4. If  $s - 542,521 = 271,432$ , then  $s =$

- A. 271,089
- B. 814,957
- C. 813,953
- D. 817,782

5. If  $35,741 - y = 7,425$ , then  $y =$

- A. 28,316
- B. 43,166
- C. 40,213
- D. 15,730

6. There are 30,000 ants in the colony. In the

colony 17,300 are females and the rest are males then the number of male ants =

- A. 47,300
- B. 12,452
- C. 50,760
- D. 12,700

7. Sara had 374,522 L.E. She bought a car for

271,500 L.E. then the remainder money with her =

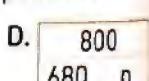
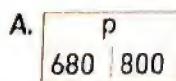
- A. 646,022
- B. 103,022
- C. 107,390
- D. 102,352

8. A seamstress had a 21-meter bolt of

cloth. She used some of the cloth to make a dress and had 15 meters left over. Let  $c$  represent the amount of used cloth. Which equation represents this problem?

- A.  $15 - c = 21$
- B.  $21 - c = 15$
- C.  $21 + 15 = c$
- D.  $21 + c = 15$

9. A train leaves the station with 680 passengers. It picks up more passengers at the next station. The train then has 800 passengers on it. Let  $p$  represent the number of passengers who boarded the train at the next station. Which bar model represents this problem?



10. What is the value of  $x$ ?  $25 + x = 37$

- A. 7
- B. 12
- C. 62
- D. 72

## 2-7 Solving Multistep Story Problems with Addition and Subtraction

### Learn

Some story problems have a **hidden question**. To solve the problem, you must first find and answer the hidden question.

#### Problem :

Amgad is reading a book. He reads 96 pages in the first week and 129 pages in the second week. The book has 290 pages.



How many pages are left to read ?

Here are some steps to solving multistep story problems.

1. Circle important numbers and labels.
2. Underline questions.
3. Draw a box around operation clues.
4. Examine the information :
  - What is known ? numbers of readed pages [96 pages, 129 pages], number of book's pages [290 pages]
  - What is unknown ? **number of left unreaded pages**.
  - What is the hidden question ? "How many pages did Amgad read in the two weeks ?"

5. Use what is known to answer the hidden question.

$$\text{Amgad read} = 96 + 129 = 225 \text{ pages}$$

6. Use the new information to solve the problem and find the unknown.

$$\text{The left pages} = 290 - 225 = 65 \text{ pages}$$

So, these are 65 pages left to read.

#### Notes for parents :

- Give your child a multi-step story problem and ask your child to use the solving steps to help solving the problem.

**Another Way**

- **Hidden question :** How many pages are left in the first week ?

$$290 - 96 = 194 \text{ pages}$$

- **Final answer :** How many pages are left to read ?

$$194 - 129 = 65 \text{ pages}$$

**Example**

**Read the story problem, identify the hidden question, then solve the problem.**

Sara had 550,000 pounds. She bought a car for 235,865 pounds and a mobile for 7,999 pounds. How many pounds are left with Sara ?

**Solution** 

**Hidden question :** How many pounds are paid for the car and the mobile ?

$$235,865 + 7,999 = 243,864 \text{ pounds}$$

**Final answer** :  $550,000 - 243,864 = 306,136$  pounds.

The lefted money with Sara is 306,136 pounds.

**Check** your understanding

**Read the story problem, identify the hidden question then, solve the problem.**

A library sold 25,325 books in the first week, 19,712 books in the second week and 28,119 in the third week. If the library had 473,590 book. How many books are left ?

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**Notes for parents :**

- Let your child to tell you a multistep story problem has a hidden question and ask him/her to find the answer.

**Exercise  
12**

## 2-7 Solving Multistep Story Problems with Addition and Subtraction

REMEMBER

UNDERSTAND

APPLY

PROBLEM SOLVING

From the school book

1. Read the story problem. Next, read the steps to solve the problem. Number the steps from 1 to 6 to put them in the correct answer.

Ahmed had a pie with 340 calories for breakfast. Then, Ahmed had a glass of milk, an apple, and a chicken sandwich for lunch.

The milk had 190 calories, the apple had 85 calories, and the chicken sandwich had 255 calories. If the average adult can eat 2,000 calories per day, how many more calories can Ahmed eat today?

Subtract 870 from 2,000. The answer is 1,130 , so Ahmed can eat 1,130 more calories today.

Draw a box around "How many more".

Add the calories of the foods Ahmed has eaten to answer the hidden question [how many calories Ahmed has already eaten]. The answer is 870 calories.

Circle 340 calories, 190 calories, 85 calories, 255 calories, and 2,000 calories.

Identify the known information [What Ahmed ate and how many calories each item had, the average adult is supposed to eat 2,000 calories per day].

Identify the unknown information [how many calories Ahmed has already eaten' how many more calories Ahmed can eat].

Underline "how many more calories should Ahmed eat today?".

2. Use the problem-solving steps to solve the story problems. Remember, you will have to

- answer the hidden question first and then answer the main question. Be sure to show your work.

- a. Sara, Bassem and Mina are collecting stamps. Sara collected 743 stamps, Bassem collected 198 stamps and Mina collected 357 stamps. How many more stamps did Sara collect than Bassem and Mina have combined ?

- b. ☐ The Nile River is approximately 6,650 kilometers long. Kareem and his family travel the Nile River from one end to the other end. If they travel 1,075 kilometers in January, then 1,120 kilometers in February, and then 1,325 kilometers in March, how many more kilometers do they still need to travel to reach the other end?
- 
- 
- 
- c. A factory sold 6,580 toys in the first month, 7,214 toys in the second month, and 5,975 toys in the third month. They expect to sell 25,000 toys by the end of the fourth month. How many toys are needed to be sold in the fourth month to reach this count?
- 
- 
- 
- d. ☐ The ant colony website hopes that a new colony A with up to 173,500 will form. If a colony of 27,385 ants and a colony of 52,890 ants join the new colony, how many more ants can join?
- 
- 
- 
- e. ☐ Hazem and Menna are monitoring ant colonies on the website. Hazem has been monitoring an ant colony with 132,890 ants. Menna has been monitoring an ant colony with 57,024 ants and another colony with 72,999 ants. Who has been monitoring more ants? How many more?
- 
- 
- 
- f. ☐ The Great Pyramid had 59,000 visitors in January, 27,525 visitors in February, and 32,975 visitors in March. They expect to have 150,000 visitors by the end of April. How many visitors need to show up in April to reach this count?
- 
- 
-

- g. New Valley has a population of 256,088. If Matrouh has a population of 429,999 and South Sinai has a population of 108,951, how many more people do Matrouh and South Sinai have combined than New Valley ?
- 
- 

- h. Aswan has a population of 1,575,914. If Luxor has a population of 1,333,309 and Red Sea has a population of 383,796, how many more people do Luxor and Red Sea have combined than Aswan ?
- 
- 

## Challenge

3. The following table represents the number of shirts in stock of a store.

Answer the following problems.

- a. How many more red shirts than green shirts ?

	Green	Red
Small	15,436	18,421
Medium	33,142	43,218
Large	5,347	14,132

- b. How many more small shirts than large shirts ?

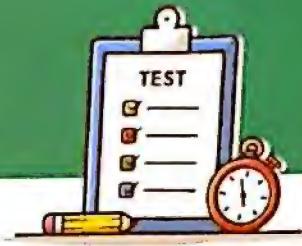
- c. How many more medium shirts than large shirts ?

## Multiple Choice Questions

Choose the correct answer.

- 1.** Nada was counting ants in a colony. She counted 3,785 ants on Monday and 1,525 ants on Tuesday. If there are 10,520 ants in this colony. How many ants still to count ?
- A. 3,210 ants      B. 4,210 ants  
C. 5,210 ants      D. 6,210 ants
- 2.** A ship entered a port with 611 tonnes of cargo. It picked up a 25 tonnes shipment of fresh fruit and a 149 tonnes shipment of electronics before it left the port. How much cargo did the ship leave port with?
- A. 437 tonnes      B. 636 tonnes  
C. 760 tonnes      D. 785 tonnes
- 3.** A water truck was filled with 4,000 liters of water. It delivered 1,250 liters to its first client. It delivered 620 liters to its second client. It delivered 2,120 liters to its last client. How much water was left in the truck ?
- A. 10 liters      B. 50 liters  
C. 2,130 liters      D. 7,990 liters
- 4.** Yosra mixes 50 grams of fertilizer with 500 grams of soil. She fills a pot with the mixture and has 130 grams left over at the end. How much mixture went into the pot ?
- A. 320 grams      B. 370 grams  
C. 420 grams      D. 680 grams
- 5.** Sara opened her flower shop in the morning with 92 arrangements available to sell. She sold 15 in the morning, 29 in the afternoon, and still had some left at the end of the day. How can you find the number of flower arrangements that were left at the end of the day ?  
Select two correct answers.
- A. Subtract the 15 arrangements she sold in the morning from the 92 total Sara had at the beginning of the day. Then subtract the 29 flower arrangements she sold in the afternoon.
- B. Add the 15 arrangements she sold in the morning to the 92 total Sara had at the beginning of the day. Then subtract the 29 flower arrangements she sold in the afternoon.
- C. Subtract the 29 arrangements she sold in the afternoon from the 92 total Sara had at the beginning of the day. Then subtract the 15 flower arrangements she sold in the morning.
- D. Add the 29 arrangements she sold in the afternoon to the 92 total Sara had at the beginning of the day. Then subtract the 15 flower arrangements she sold in the morning.
- E. Add the 15 arrangements she sold in the morning to the 92 total Sara had at the beginning of the day. Then add the 29 flower arrangements she sold in the afternoon.
- F. Add the 29 arrangements she sold in the afternoon to the 92 total Sara had at the beginning of the day. Then add the 15 flower arrangements she sold in the morning.

## Concept 2 Assessment | Unit 2



1. put (✓) to the correct answer and (✗) to the incorrect answer.

- a. If  $m - 3 = 7$ , then  $m = 4$  ( )
- b. If  $13,451 + x = 22,424$ , then  $x = 8,973$  ( )
- c. If  $78,000 - m = 42,780$ , then  $m = 35,220$  ( )
- d. Two ant colonies have 7,462 ants, colony A has 4,322 ants, then the number of ants in colony B = 11,784 ( )
- e. Bassem had 50 L.E. he bought juice for 5 L.E. and candy for 17 L.E., then the remainder money with him is 28 L.E. ( )
- f. If  $m + 2,000 = 3,500$ , then  $m = 5,500$  ( )

2. Choose the correct answer.

- a. If  $p + 3,562 = 5,562$ , then  $p =$  \_\_\_\_\_  
 A. 1,000      B. 2,000      C. 9,124      D. 9,220
- b. If  $3,200 - x = 1,500$ , then  $x =$  \_\_\_\_\_  
 A. 1,700      B. 4,700      C. 4,800      D. 5,000
- c. What is the value of  $x$ ?  $36 + x = 57$   
 A. 19      B. 21      C. 83      D. 93
- d. Mariam is reading a book. She reads 56 pages in the first day and 78 pages in the second day. She has 69 pages left to read. How many pages are in the book?  
 A. 91 pages      B. 65 pages  
 C. 203 pages      D. 47 pages
- e. A store started the day with 24 jackets. The store had 10 jackets left at the end of the day. Let  $j$  represent the number of jackets sold. Which bar model represents how many jackets the store sold? \_\_\_\_\_

A. 

24	
10	$j$

B. 

10	
24	$j$

C. 

$j$	
24	10

D. 

$j$	
10	24

- f. Ahmed bought several kahk cookies. After he ate 4 of them, he had 12 left. Let  $c$  represent the number of cookies. Which equation represents how many cookies he bought?

A.  $c + 4 = 12$

B.  $c + 12 = 4$

C.  $c - 4 = 12$

D.  $12 - 4 = c$

**3. Complete the following.**

a. If  $m - 12 = 4$ , then  $m =$

b. In the bar model 

37
$y$
17

,  $y =$

c. In the bar model 

100
35
$x$

 the equation which you can form for it is

d. If  $152,350 = c + 42,125$ , then  $c =$

e. In the bar model 

$x$
54
32

,  $x =$

f. Anty colony A has 3,425 female ants, if the colony has 8,211 ants, then the number male ants =

**4. Match.**

a.  $3,648 - x = 3,625$

1.  $x = 21$

b.  $x + 38 = 62$

2.  $x = 22$

c.  $x - 8 = 14$

3.  $x = 23$

d.  $3,254 + x = 3,275$

4.  $x = 24$

5. Amgad plans to paint his house. He already has some paint for the project. He buys additional 26 liters of paint before starting the project. After using 19 liters for the project, he has 11 liters left. How much paint did he have before he started the project?

6. Sara adds 145 grams of cornstarch to a bowl and then mixes in 225 grams of flour. She weighs the bowl with the ingredients in it and finds that it weighs 500 grams in total. How much does the bowl weigh?

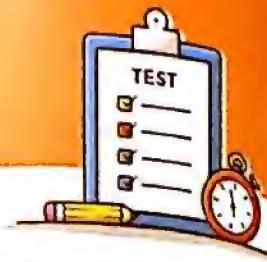
7. The odometer on Zayn's car reads 350 kilometers. After driving to his friend's house, it reads 372 kilometers. He wrote down the equation  $350 + x = 372$  where  $x$  stands for how far he drove. What is  $x$ ?
- 
8. The Suez Canal extends from Port Said to the city of Suez and is 193,120 meters long.
- If a boat travels 38,620 meters each day for 2 days, how many more meters will it need to travel to reach the end of the canal?
- 
9. Tanta has a population of 404,901. If Banha has a population of 167,029 and Kafr ad Dawwar has a population of 267,370, how many more people live in Banha and Kafr ad Dawwar combined than in Tanta?
- 
10. Salma was counting ants in colony A. She counted 1,525 ants on Monday, 19,750 ants on Tuesday, and 3,705 ants on Wednesday. If there are 30,520 ants in colony A, how many more ants does she still need to count?

11. In the opposite bar model
- |   |     |
|---|-----|
|   | 15  |
| 7 | $x$ |
- Write four equations representing it.

12. Sandy had L.E. 2,000,000 she bought a car for 235,800 L.E. and a mobile for 2,500 L.E.
- Find the remainder money with her.



## Unit Two Assessment



1. Put (✓) to the correct answer and (✗) to the incorrect answer.

- a. The statement  $47 - 23 = 23 - 47$  is correct, because the commutative property applies to addition and subtraction. [ ]
- b. If  $x + 5 = 7$ , then  $x = 2$  [ ]
- c.  $469 + 252 = 217$  [ ]
- d. The strategy to find  $112 - 69$  mentally is using compensation to subtract  $112 - 70$ , then add 1 [ ]
- e. The best rounding to estimate a reasonable answer to the problem  $427 + 148$  is  $430 + 150 = 580$  so, the answer 580 is reasonable. [ ]
- f. Rana had 251,750 pounds, she bought a mobile for 5,555 pounds and a car for 125,780 pounds, then the left money with Rana is 131,335 pounds. [ ]

2. Choose the correct answer.

- a. In the bar model 

	256
m	180

, the value of m is \_\_\_\_\_.  
A. 124      B. 156      C. 76      D. 436
- b.  $(112 + 38) + 77 = 112 + [ \quad + 77 ]$   
A. 38      B. 77      C. 115      D. 150
- c.  $1,325 - 820 = \underline{\hspace{2cm}}$   
A. 305      B. 405      C. 505      D. 1,505
- d.  $0 + 5,298 = 5,298$  is using \_\_\_\_\_.  
A. associative property      B. commutative property  
C. additive identity property      D. subtraction mental strategy
- e. If  $3,645 + y = 5,789$ , then the value of y is \_\_\_\_\_.  
A. 2,144      B. 3,144      C. 8,434      D. 9,434
- f. Joudy found that  $38,828 + 52,309 = 91,137$ . Which estimate could she use to check if her answer is reasonable?  
A.  $30,000 + 50,000 = 80,000$       B.  $30,000 + 60,000 = 90,000$   
C.  $40,000 + 50,000 = 90,000$       D.  $40,000 + 60,000 = 100,000$

## 3. Complete the following.

- a. Two ants colonies have 33,585 ants. If colony A has 17,990 ants, then the number of ants in colony B = \_\_\_\_\_ ants.
- b. To find  $120 - 23$  mentally using break apart subtract \_\_\_\_\_, then subtract \_\_\_\_\_ to find that  $120 - 23$  equals \_\_\_\_\_.
- c. In the bar model 

87	
27	c

, the equation which you can form for it is \_\_\_\_\_ and the value of c equals \_\_\_\_\_.
- d. If  $n - 34 = 29$ , then  $n =$  \_\_\_\_\_.
- e.  $7,000 - 350 =$  \_\_\_\_\_.
- f. A local bakery sold 7,120 zalabya in one day. If they sold 1,269 zalabya in the morning and 2,658 zalabya in the afternoon, then the number of zalabya sold during the rest of the day is \_\_\_\_\_ zalabya.

## 4. Match.

a.  $3,508 + 3,692$

1.  $1,000 + 30,000 + 477$

b.  $12,968 + 12,932$

2.  $2,000 + 900 + 6$

c.  $6,592 - 3,686$

3.  $9,653 - 2,453$

d.  $1,000,000 - 968,523$

4.  $35,986 - 10,086$

5. Nader made 18 pieces of falafel. He ate 6 pieces and his brother ate 5 pieces. Represent these data using bar model to show how many pieces are left?

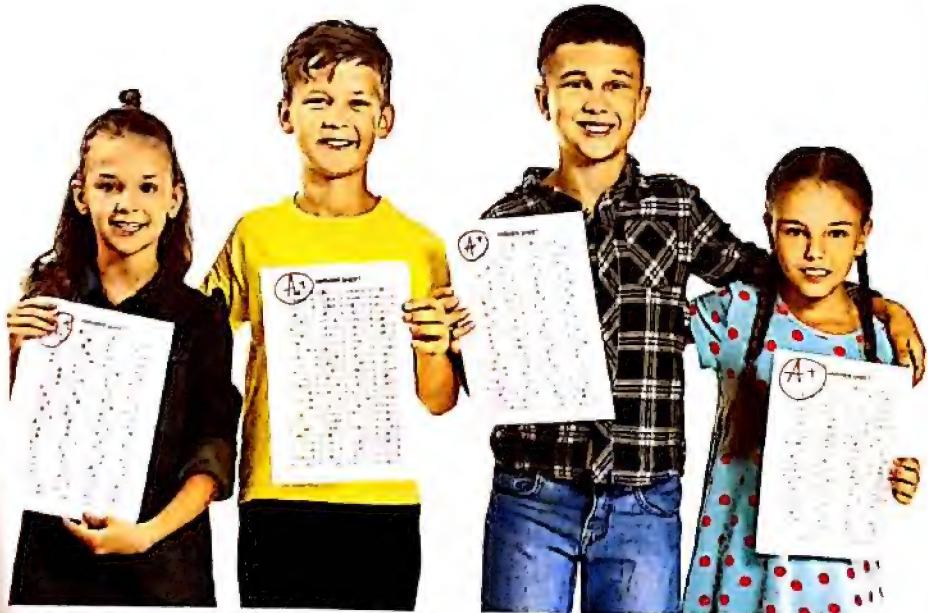
6. Use two different mental math strategies to find the answer of the following.

a.  $17 + 15$

b.  $266 - 192$

7. Sara had a sandwich with 290 calories for breakfast. Then Sara had a glass of milk, an orange and a chicken sandwich for lunch. The milk had 190 calories, the orange had 85 calories and the chicken sandwich had 355 calories. If the average adult can eat 2,000 calories per day, how many more calories can Sara eat today?

8. A fire ant colony has 235,000 ants. A Gigantiops destructor ant colony has 7,800 ants. What is the difference between the size of the two colonies? Round to the nearest thousand to estimate and check the reasonableness of the answer.
9. The Cairo tower had 66,000 visitors in January, 38,536 visitors in February and 46,985 visitors in March. They expect to have 200,000 visitors by the end of April. How many visitors need to show up in April to reach this count?
10. In the opposite bar model:  
 Write four equations represent it  
 Find the value of  $x$
- |        |     |
|--------|-----|
| 13,280 |     |
| 5,420  | $x$ |
11. Use count back or count on using the number line to find  $734 - 245$
12. The odometer on Ramy's car reads 275 kilometer. After driving to his friend's house, it reads 293 kilometer. He wrote down the equation  $275 + k = 293$  where  $k$  stands for how far he drove. What is  $k$ ?



## Concepts of Measurement

- » Concept 1 : Metric Measurement
- » Concept 2 : Time and Scaled Measurements
- » Concept 3 : Measurement All Around



### Fast Fact

Giraffes' long necks allow them to reach the leaves on treetops. A giraffe is the tallest land mammal. Some giraffes can be as tall as 6 meters !

Concept

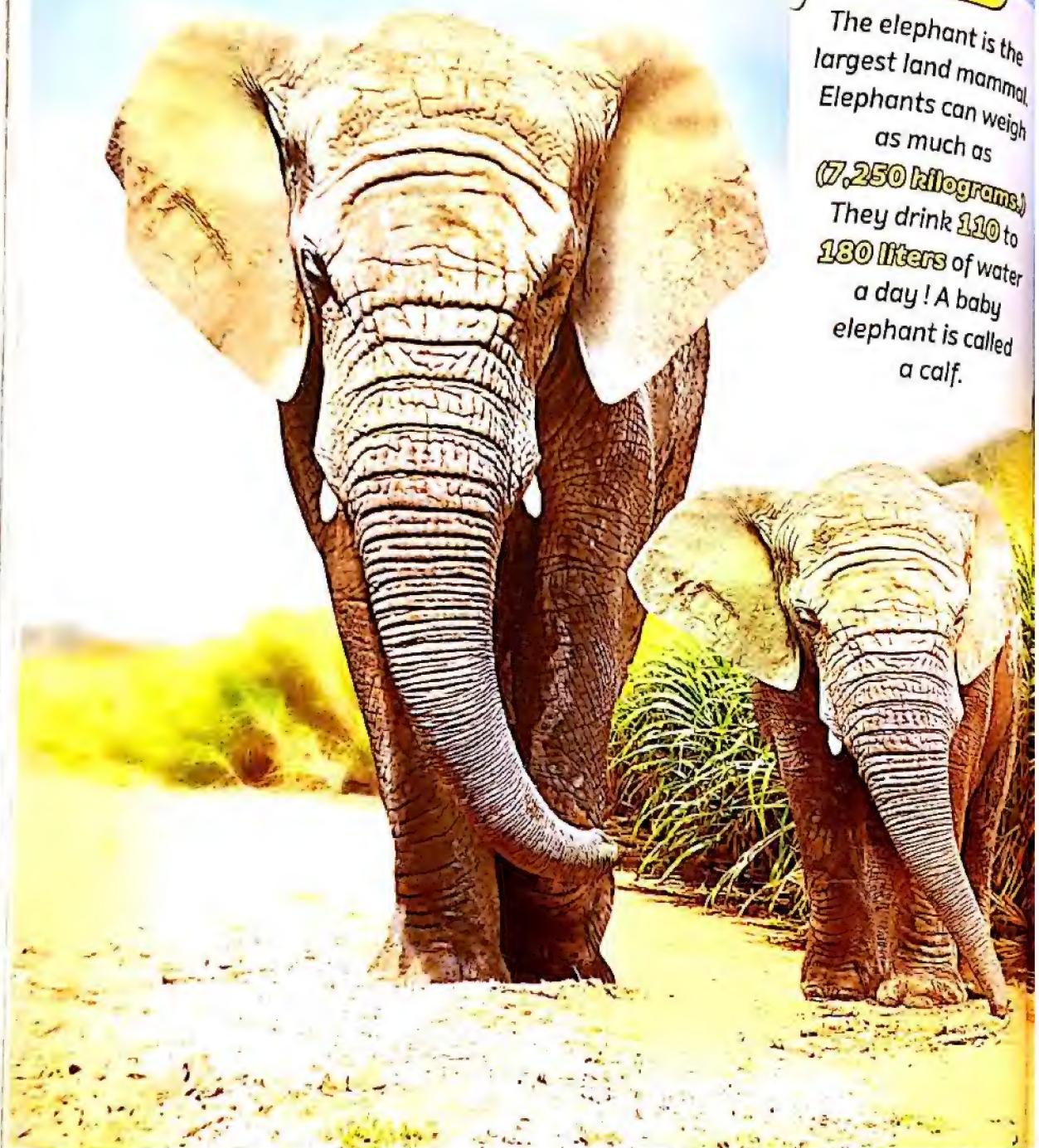
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# Metric Measurement



## Fast Fact

The elephant is the largest land mammal. Elephants can weigh as much as (7,250 kilograms). They drink 110 to 180 liters of water a day! A baby elephant is called a calf.



## Concept Overview

### In concept 1:

Metric Measurement, students review units of length, mass, and capacity and extend their understanding by investigating the relationships between units. Students make connections between the metric conversion chart and the place value chart, including the understanding that, as we move to the left in a place value chart, the value of the digit increases by 10 times. Students also recognize that the same measurement can be represented in multiple ways (for example, 100 centimeters is the same as 1 meter). Lessons 1, 2, and 3 are deliberately similar to help students see patterns in the metric system.

Lesson No.	Lesson Name	Vocabulary Terms	Learning Objectives
Lesson 1	3-1 Ant Travel	Centi - Centimeter - Convert - Decompose - Kilo - Kilometer - Length - Meter - Metric System - Milli - Millimeter	<ul style="list-style-type: none"><li>Students will explain the relationship between metric units of length.</li><li>Students will convert between metric units of length.</li></ul>
Lesson 2	3-2 The Weight Can Wait	Grams - Kilograms - Mass - Weight	<ul style="list-style-type: none"><li>Students will explain the relationship between metric units of mass.</li><li>Students will convert between metric units of mass.</li></ul>
Lesson 3	3-3 Fill It Up	Capacity - Liter - Milliliter - Volume	<ul style="list-style-type: none"><li>Students will explain the relationship between metric units of capacity.</li><li>Students will convert between metric units of capacity.</li></ul>
Lesson 4	3-4 Measurement and Unit Conversions	Review vocabulary as needed	<ul style="list-style-type: none"><li>Students will compare place value relationships and measurement conversions.</li><li>Students will use multiplication and division to convert units of measurement.</li></ul>

## 3-1 Ant Travel

### "Metric Units of Length"

#### Learn

Meter, centimeter and millimeter are three units of measuring lengths.



A corn kernel is about 10 **millimeters** long.

An ear of corn is about 20 **centimeters** long.

A young corn plant is about 1 **meter**.



#### Relating units of length

Rasha visited Suez Canal with school trip, and asked her teacher "What's the length of Suez Canal?", the teacher answered "About 193,000 meters, and you can use another unit to the large lengths which is **kilometer**, so the length is about 193 km"



- In the **metric system**, the **meter [m]** is the basic unit of length.
- The metric system also uses prefixes to describe amounts that are larger or smaller than the basic unit. The most common prefixes are **kilo-**, meaning 1,000. **centi-**, meaning  $\frac{1}{100}$  and **milli-**, meaning  $\frac{1}{1,000}$ .

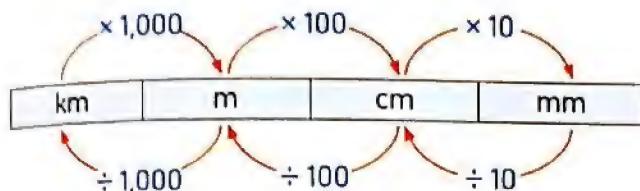
#### Notes for parents :

- Ask your child to find something at home is about 10 cm in length, and another something is about 1 m.

Name	Abbreviation	Number of Base Units	Approximate Comparison
Length	Kilometer	km	1,000
	Meter	m	1
	Centimeter	cm	$\frac{1}{100}$
	Millimeter	mm	$\frac{1}{1,000}$

- In this lesson, you will study the relationship between "km, m , cm, mm", and you are going to study other metric units of length at the last lesson of this concept.

### Converting metric length units



**Table of Measures**

1 kilometer = 1,000 meters  
 1 meter = 100 centimeters  
 1 centimeters = 10 millimeters

- The tables below helps you convert from length unit to another.

km	1	2	3	4	5	6
m	1,000	2,000	3,000	4,000	5,000	6,000

m	1	2	3	4	5	6
cm	100	200	300	400	500	600

cm	1	2	3	4	5	6
mm	10	20	30	40	50	60

### Example 1

Fill in blanks.

a.  $8 \text{ m} = \underline{\hspace{2cm}} \text{ cm}$

b.  $700 \text{ cm} = \underline{\hspace{2cm}} \text{ m}$

c.  $130 \text{ mm} = \underline{\hspace{2cm}} \text{ cm}$

d.  $15,000 \text{ m} = \underline{\hspace{2cm}} \text{ km}$

e.  $5 \text{ km} = \underline{\hspace{2cm}} \text{ cm}$

\*Later in this concept, your child will understand that when moving from a length unit to another he/she can multiply by 10, 100 , 1,000 , ...

**Solution**

- a.  $8 \text{ m} = 800 \text{ cm}$  [Think:  $1 \text{ m} = 100 \text{ cm}$ ]  
 c.  $130 \text{ mm} = 13 \text{ cm}$  [Think:  $10 \text{ mm} = 1 \text{ cm}$ ]  
 e.  $5 \text{ km} = 5,000 \text{ m}$  [Think:  $1 \text{ km} = 1,000 \text{ m}$ ]  
 $= 500,000 \text{ cm}$  [Think:  $1 \text{ m} = 100 \text{ cm}$ ]

- b.  $700 \text{ cm} = 7 \text{ m}$  [Think:  $100 \text{ cm} = 1 \text{ m}$ ]  
 d.  $15,000 \text{ m} = 15 \text{ km}$  [Think:  $1,000 \text{ m} = 1 \text{ km}$ ]

**Example 2**

Complete each of the following

a.  $7 \text{ m}, 56 \text{ cm} = \text{ } \text{ cm}$   
 c.  $12 \text{ km}, 12 \text{ m} = \text{ } \text{ m}$

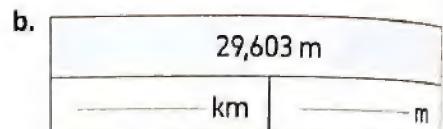
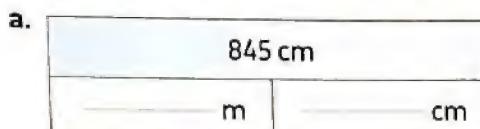
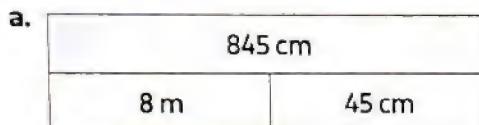
b.  $9 \text{ cm}, 5 \text{ mm} = \text{ } \text{ mm}$

**Solution**

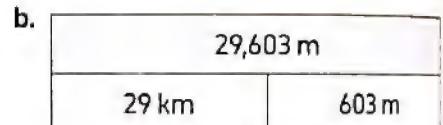
- a.  $7 \text{ m}, 56 \text{ cm} = 700 \text{ cm} + 56 \text{ cm} = 756 \text{ cm}$   
 b.  $9 \text{ cm}, 5 \text{ mm} = 90 \text{ mm} + 5 \text{ mm} = 95 \text{ mm}$   
 c.  $12 \text{ km}, 12 \text{ m} = 12000 \text{ m} + 12 \text{ m} = 12,012 \text{ m}$

**Example 3**

Convert the lengths into the units on the bar models.

**Solution**

[Think:  $845 = 800 + 45$ ]



[Think:  $29,603 = 29,000 + 603$ ]

**Check** your understandingCompare, write ( $>$ ,  $<$  or  $=$ ) for each circle.

a.  $8 \text{ m} \bigcirc 400 \text{ cm}$

b.  $9,000 \text{ m} \bigcirc 9 \text{ km}$

c.  $2,000 \text{ cm} \bigcirc 2 \text{ m}$

d.  $600 \text{ mm} \bigcirc 70 \text{ cm}$

**Notes for parents :**

• Let your child explain the relationships between the metric length units "km, m, cm, mm".

# Exercise 13

## 3-1 Ant Travel "Metric Units of Length"

REMEMBER

UNDERSTAND

APPLY

PROBLEM SOLVING

From the school book

1. a. Circle the best unit to measure each length.

1. Height of a student

Kilometer

Meter

Centimeter

Millimeter

2. Distance between home and school

Kilometer

Meter

Centimeter

Millimeter

3. Length of the Nile River

Kilometer

Meter

Centimeter

Millimeter

4. Length of an ant

Kilometer

Meter

Centimeter

Millimeter

5. Distance from Cairo to Alexandria

Kilometer

Meter

Centimeter

Millimeter

- b. Fill in the blanks to answer the following questions. Think of things that could be

measured in each unit.

- \_\_\_\_\_ is best measured in kilometers because \_\_\_\_\_
- \_\_\_\_\_ is best measured in meters because \_\_\_\_\_
- \_\_\_\_\_ is best measured in centimeters because \_\_\_\_\_
- \_\_\_\_\_ is best measured in millimeters because \_\_\_\_\_

### 2. Complete.

a.  1 km = \_\_\_\_\_ m

b. 4 km = \_\_\_\_\_ m

c. 100 mm = \_\_\_\_\_ cm

d.  1 m = \_\_\_\_\_ cm

e. 20 m = \_\_\_\_\_ cm

f. 30 cm = \_\_\_\_\_ mm

g. 4,000 cm = \_\_\_\_\_ mm

h. 50,000 m = \_\_\_\_\_ km

i. \_\_\_\_\_ m = 70 km

j. \_\_\_\_\_ cm = 3,900 m

k. 6 m = \_\_\_\_\_ mm

l. 8 km = \_\_\_\_\_ cm

## 3. Find the missing numbers.

a.

230 cm	
m	cm

b.

478 cm	
m	cm

c.

678 cm	
m	cm

d.

m	
7 km	6 m

e.

m	
8 km	88 m

f.

mm	
7 cm	5 mm

g.  $5,744 \text{ m} = \underline{\hspace{1cm}} \text{ km}, \underline{\hspace{1cm}} \text{ m}$

h.  $98 \text{ mm} = \underline{\hspace{1cm}} \text{ cm}, \underline{\hspace{1cm}} \text{ mm}$

i.  $3,576 \text{ cm} = \underline{\hspace{1cm}} \text{ m}, \underline{\hspace{1cm}} \text{ cm}$

j.  $\underline{\hspace{1cm}} \text{ cm} = 5 \text{ m}, 91 \text{ cm}$

l.  $8 \text{ km}, 14 \text{ m} = \underline{\hspace{1cm}} \text{ m}$

n.  $27 \text{ km}, 55 \text{ m} = \underline{\hspace{1cm}} \text{ m}$

k.  $4 \text{ m}, 18 \text{ cm} = \underline{\hspace{1cm}} \text{ cm}$

m.  $18 \text{ m}, 14 \text{ cm} = \underline{\hspace{1cm}} \text{ cm}$

## 4. Put (✓) for the correct statement or (✗) for the incorrect one.

a.  $4 \text{ km} = 400 \text{ m}$

[      ]

b.  $55 \text{ m} = 5 \text{ m}, 5 \text{ cm}$

[      ]

c.  $6 \text{ km} = 6,000 \text{ cm}$

[      ]

d.  $70 \text{ m} = 7,000 \text{ cm}$

[      ]

e.  $6 \text{ km}, 6 \text{ m} = 12 \text{ m}$ .

[      ]

f.  $8,000 \text{ mm} = 8 \text{ m}$

[      ]

## 5. Answer each one of the following.



- a. The driveway in front of a brown house is 65 meters long and the driveway in front of a red house is 5,900 centimeters long, which house has a longer driveway?
- 
- 
- 

- b. A train covers 3 km in one minute, what is the distance the train covers in 7 minutes in kilometers and in meters?
- 
- 
-

c. When scientists studied the anthill, they found that it was 8 meters deep.

- How many centimeters would that be? Show your work.

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2. The colony had to move tons of soil to construct their nest. The worker ants had to carry loads of soil 1 kilometer to the surface. If one ant carried 10 loads of soil in a week, How many kilometers did it travel while moving soil? How many meters? How many centimeters?

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d. Carpenter ants are so named because they build their nests inside wood, they do not eat this wood. Instead, they create a smooth tunnel system through it for their colony. Carpenter ants can be up to 3 centimeters long. A mature colony can have up to 100,000 ants. If the ants lined up end to end and each ant is 1 centimeter long, How many meters long would a line of 100,000 ants be?

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e. Using the information from the first item,

How many kilometers long would the line of 100,000 ants be?

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f. If one black ant can walk 250 meters in 1 hour, how many hours will it take to walk 1 kilometer?

If the same black ant walked for 10 hours, how far would it go? Express your answer in kilometers and meters.

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## Multiple Choice Questions

Choose the correct answer.

1.  $18 \text{ m}, 14 \text{ cm} = \text{ cm}$

- A. 32
- B. 1,814
- C. 18,140
- D. 18,014

2.  $3 \text{ km} = \text{ m}$

- A. 30
- B. 300
- C. 3,000
- D. 13,000

3.  $5,000 \text{ mm} = \text{ m}$

- A. 5
- B. 50
- C. 500
- D. 50,000

4.  $505 \text{ cm} = \text{ m, } \text{ cm}$

- A. 5, 5
- B. 5, 50
- C. 50, 5
- D. 50, 50

5.  $\text{m} = 8,400 \text{ cm}$

- A. 84
- B. 840
- C. 8,400
- D. 84,000

6. Anwar measures a stick that is 23 centimeters long. Then, he writes the length of the stick in millimeters. What is the place value of the number 2 in the number that Anwar wrote?
- A. Tens
  - B. Hundreds
  - C. Thousands
  - D. Ten Thousands

7. Which sentence best explains the relationship between a meter and a centimeter?

- A. A meter is equal to 100 centimeters.
- B. A meter is equal to 10 centimeters.
- C. A centimeter is equal to 100 meters.
- D. A centimeter is equal to 10 meters.

8. Which sentence about 7 meters is correct?

- A. A meter is 100 times the length of a centimeter. There are 700 centimeters in 7 meters.
- B. A meter is 10 times the length of a centimeter. There are 70 centimeters in 7 meters.
- C. A meter is a larger unit of measurement than a centimeter. There are 7 meters in 7,000 centimeters.
- D. A meter is a smaller unit of measurement than a millimeter. There are 700 millimeters in 7 meters.

9. Amani's class is learning about measuring units of length. At the end of the lesson, each

- student wrote a statement explaining how lengths are related. Which two student statements are correct?

- A. A meter is 10 times as long as 1 millimeter.
- B. A meter is 100 times as long as 1 centimeter.
- C. A meter is 1,000 times as long as 1 kilometer.
- D. A kilometer is 1,000 times as long as 1 meter.
- E. A kilometer is 1,000 times as long as 1 millimeter.

10. Baahir walked for 4 kilometers. Which two distances also describe how far Baahir walked?

- A. 40 decimeters
- B. 400 millimeters
- C. 4,000 meters
- D. 400,000 millimeters
- E. 400,000 centimeters

## 3-2 The Weight Can Wait

### "Metric Units of Mass"

#### Learn

Matter is what all objects are made of. **Mass** is the amount of matter in an object. Metric units of mass are the **gram (g)** and the **kilogram (kg)**.



The mass of a small paperclip is about 1g



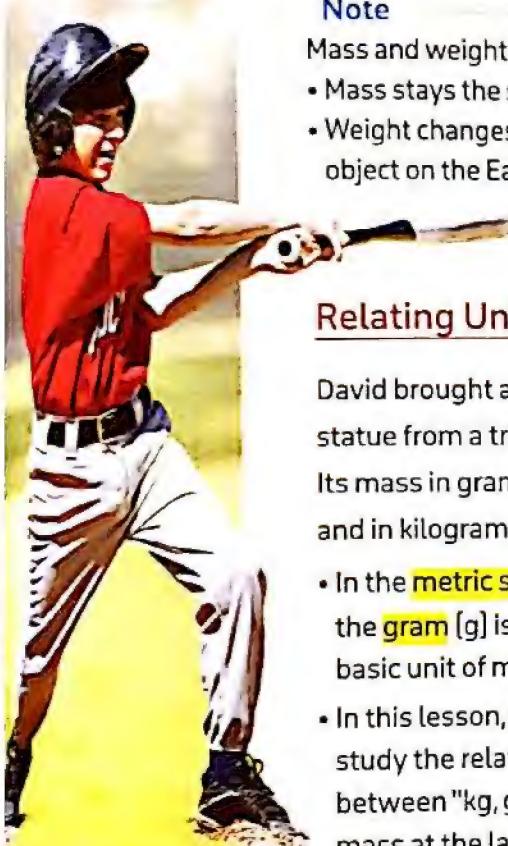
1 kg  
1,000 g = 1 kg

The mass of a baseball bat is about 1kg

#### Note

Mass and weight are different.

- Mass stays the same no matter where you are.
- Weight changes from a place to another, for example the weight of any object on the Earth is different from its weight on the moon.



#### Relating Units of Mass

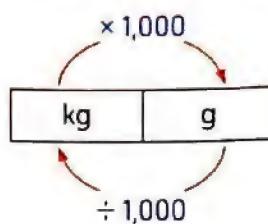
David brought a souvenir statue from a trip to Sinai. Its mass in grams is 2,000 and in kilograms is 2.

- In the **metric system**, the **gram (g)** is the basic unit of mass.
- In this lesson, you will study the relationship between "kg, g", and you are going to study other metric units of mass at the last lesson of this concept.



#### Notes for parents :

- Ask your child to find something at home of mass 20 g , and another something of mass 1 kg.

Converting Metric Mass Units

1 kilogram = 1,000 grams

- The table below helps you to convert from mass unit to another.

<b>kg</b>	1	2	3	4	5	6
<b>g</b>	1,000	2,000	3,000	4,000	5,000	6,000

**Example 1**

Find each missing number.

a. 9 kilograms = \_\_\_\_\_ grams.

b. 32,000 grams = \_\_\_\_\_ kilograms

**Solution**

a. 9 kilograms = 9,000 grams

(Think : 1 kg = 1,000 g)

b. 32,000 grams = 32 kilograms

(Think : 1,000 g = 1 kg)

**Example 2**

Complete each of the following.

a. 4 kg , 63 g = \_\_\_\_\_ g

b. 18 kg , 81 g = \_\_\_\_\_ g

**Solution**

a. 4 kg , 63 g = 4,000 g + 63 g = 4,063 g

b. 18 kg , 81 g = 18,000 g + 81 g = 18,081 g

**Notes for parents :**

- Later in this concept, your child will understand that when moving from a mass unit to another he/she can multiply by 10 , 100 , 1,000 , .....

**Example 3**

Convert the masses into the units on the bar models.

1,560 g	
kg	g

27,027 g	
kg	g

**Solution** 

1,560 g	
1kg	560 g

[Think :  $1,560 = 1,000 + 560$ ]

27,027 g	
27 kg	27 g

[Think :  $27,027 = 27,000 + 27$ ]

**Example 4**

An Oat bag of mass 250 g, Dalia bought 6 bags, what is the total mass of bags in kilograms and grams?

**Solution** 

$$\text{The total mass} = [250 + 250] + [250 + 250] + [250 + 250]$$

$$= [500 + 500] + 500$$

$$= 1,000 + 500 = 1 \text{ kg}, 500 \text{ g}$$

**Check your understanding**

What is the order of the following masses from least to greatest?

6 kg , 4,769 g , 980 kg , 68,000 g

\* Let your child explain the relationship between the metric mass units "kg , g".

## Exercise 14

### 3-2 The Weight Can Wait "Metric Units of Mass"

REMEMBER

UNDERSTAND

ON YOUR

PROBLEM SOLVING

From the school bus

1. Complete. Tell whether you multiply or divide.

a.  $1\text{ kg} = \underline{\hspace{2cm}}\text{ g}$

b.  $\underline{\hspace{2cm}}\text{ kg} = 3\text{ kg}$   $\underline{\hspace{2cm}}\text{ g}$

c.  $\underline{\hspace{2cm}}\text{ kg} = 5,000\text{ g}$

d.  $\underline{\hspace{2cm}}\text{ kg} = 8\text{ kg}$   $\underline{\hspace{2cm}}\text{ g}$

e.  $7,000\text{ g} = \underline{\hspace{2cm}}\text{ kg}$

f.  $16,000\text{ g} = \underline{\hspace{2cm}}\text{ kg}$

g.  $\underline{\hspace{2cm}}\text{ kg} = 30,000\text{ g}$

h.  $\underline{\hspace{2cm}}\text{ kg} = 9,000\text{ g}$

i.  $37,000\text{ g} = \underline{\hspace{2cm}}\text{ kg}$

j.  $90,000\text{ g} = \underline{\hspace{2cm}}\text{ kg}$

k.  $\underline{\hspace{2cm}}\text{ kg} = 4\text{ kg}$   $\underline{\hspace{2cm}}\text{ g}$

l.  $\underline{\hspace{2cm}}\text{ kg} = 60,000\text{ gm}$

2. Find each missing number.

a.  $\underline{\hspace{2cm}}\text{ kg}$

4,590 g	
kg	g

b.  $\underline{\hspace{2cm}}\text{ kg}$

8,400 g	
kg	g

c.

g	
10 kg	250 g

d.

g	
15 kg	15 g

e.  $7\text{ kg}, 414\text{ g} = \underline{\hspace{2cm}}, \underline{\hspace{2cm}}\text{ g}$

f.  $1\text{ kg}, 10\text{ g} = \underline{\hspace{2cm}}, \underline{\hspace{2cm}}\text{ g}$

g.  $6,800\text{ g} = \underline{\hspace{2cm}}\text{ kg}, \underline{\hspace{2cm}}\text{ g}$

h.  $\underline{\hspace{2cm}}\text{ kg}, 2,456\text{ g} = \underline{\hspace{2cm}}\text{ kg}, \underline{\hspace{2cm}}\text{ g}$

i.  $7\text{ kg}, 7\text{ g} = \underline{\hspace{2cm}}, \underline{\hspace{2cm}}\text{ g}$

j.  $7,760\text{ g} = \underline{\hspace{2cm}}\text{ kg}, \underline{\hspace{2cm}}\text{ g}$

k.  $16,403\text{ g} = \underline{\hspace{2cm}}\text{ kg}, \underline{\hspace{2cm}}\text{ g}$

l.  $\underline{\hspace{2cm}}\text{ kg}, 4,535\text{ g} = \underline{\hspace{2cm}}, \underline{\hspace{2cm}}\text{ g}$

m.  $\underline{\hspace{2cm}}\text{ kg}, 5,235\text{ g} = \underline{\hspace{2cm}}, \underline{\hspace{2cm}}\text{ g}$

n.  $\underline{\hspace{2cm}}\text{ kg}, 7,324\text{ g} = \underline{\hspace{2cm}}, \underline{\hspace{2cm}}\text{ g}$

3. Compare. Write ( $>$ ,  $<$  or  $=$ ).

a.  $95\text{ kg}$

950 g

b.  $3\text{ kg}$

30,000 g

c.  $400\text{ g}$

400 kg

d.  $2\text{ kg}$

2,000 g

e.  $6\text{ kg}, 6\text{ g}$

660 g

f.  $2\text{ kg}, 530\text{ g}$

24,000 g

4. A colony of black ants is estimated to weigh 3,493 grams.

Rewrite that number using kilograms and grams.

5. A different ant colony is estimated to weigh 14 kilograms and 89 grams.

Rewrite that weight in grams.

6. The table shows the total weight of food

harvested by a colony's army ants over 7 days. Use the table to answer the question.

• How much food did the workers harvest in their lifespan ?

Day	Weight of food harvested
1	45 grams
2	60 grams
3	50 grams
4	35 grams
5	40 grams
6	55 grams
7	60 grams

7. Use the picture.

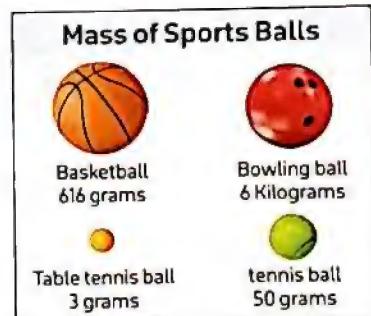
a. What is the order of the sports balls from greatest mass to least mass ?

\_\_\_\_\_

b. A baseball has a mass of about 145 grams.

Mariam has 2 basketballs and 2 baseballs in her gym bag.

Is the mass of the balls in her bag more or less than 2 kg ? Explain.



## Multiple Choice Questions

**D**

Choose the correct answer.

1. The suitable mass of a rabbit is

- A. 2,000 g
- B. 200 kg
- C. 20 g
- D. 2 g

2.  $9 \text{ kg} = \text{ } \text{---} \text{ g}$

- A. 90
- B. 900
- C. 9,000
- D. 90,000

3.  $5 \text{ kg}, 5 \text{ g} = \text{ } \text{---} \text{ g}$

- A. 10
- B. 505
- C. 5
- D. 5,005

4. Which of the following is the greatest mass?

- A. 900 g
- B. 20,000 g
- C. 70 kg
- D. 16 kg

5.  $5,400 \text{ g} = \text{ } \text{---} \text{ kg}, \text{ } \text{---} \text{ g}$

- A. 5,4
- B. 5,40
- C. 5,400
- D. 50,40

6.  $4,000 \text{ g} = \text{ } \text{---} \text{ kg}$

- A. 4
- B. 40
- C. 400
- D. 40,000

7.  $8,600 \text{ g} \text{ } \text{---} \text{ } 86 \text{ kg}$

- A. >
- B. <
- C. =

8. A fizzy can of mass 300 g, Ahmed bought 4 cans. What is the total mass of cans in kilograms and grams?

- A. 700 gm
- B. 1kg,3g
- C. 1kg,200 g
- D. 1kg,300 g

9. A class is investigating how units of mass are related. Afterward, the students write a statement to explain their findings. Which statement is correct?

- A. A gram is equal to 1,000 kilograms.
- B. A kilogram is equal to 1,000 grams.
- C. A kilogram is equal to 100 grams.
- D. A gram is equal to 10,000 kilograms.

10. Ahmed used a scale weighing in both kilograms and grams. As Ahmed weighed different objects, which two conclusions could he have made?

- A. Two kilograms are equivalent to 2,000 grams.
- B. Two hundred kilograms are equivalent to 20,000 grams.
- C. Twenty kilograms are equivalent to 20,000 grams.
- D. Twenty kilograms are equivalent to 2,000 grams.
- E. Two hundred kilograms are equivalent to 2,000,000 grams.

## 3-3 Fill It Up

### "Metric Units of Capacity"

#### Learn

Capacity is the amount of liquid a container can hold.

- A Milliliter [mL] and a liter [L] are metric units that measure capacity.



A milliliter is about 20 drops from an eyedropper.

$$1\text{ L} = 1,000 \text{ mL}$$

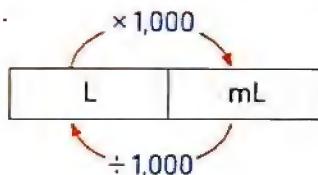


The water bottle holds 1 liter [L] of water.

#### Relating Units of Capacity

- In the metric system, the liter [L] is the basic unit of capacity.
- In this lesson, you will study the relationship between "L, mL", and you are going to study other metric units of capacity at the last lesson of this concept.

#### Converting Metric Capacity Units



$$1\text{ Liter} = 1,000 \text{ milliliters}$$

- The table below helps you convert from capacity unit to another.

L	1	2	3	4	5	6
mL	1,000	2,000	3,000	4,000	5,000	6,000

#### Notes for parents :

- Ask your child to bring 2 containers might hold about 1 liter at home.

**Example 1**

Find each missing number.

a. 8 Litres = \_\_\_\_\_ Milliliters.

b. 56,000 mL = \_\_\_\_\_ L

**Solution** 

a. 8 Liters = 8,000 milliliters

(Think : 1 Liter = 1,000 milliliters)

b. 56,000 mL = 56 L

(Think : 1,000 mL = 1 L)

**Example 2**

Find the missing number.

47,665 mL	
_____ L	_____ mL

b. 13 L , 13 mL = \_\_\_\_\_ mL

**Solution** 

47,665 mL	
47 L	665 mL

(Think :  $47,665 = 47,000 + 665$ )

b.  $13 \text{ L} , 13 \text{ mL} = 13,000 \text{ mL} + 13 \text{ mL} = 13,013$

**Example 3**

Calculate.

a.  $4 \text{ L} + 3,778 \text{ mL} = \text{_____ L}, \text{_____ mL}$

b.  $2 \text{ L} , 340 \text{ mL} + 900 \text{ mL} = \text{_____ L}, \text{_____ mL}$

c.  $5 \text{ L} - 2,570 \text{ mL} = \text{_____ L}, \text{_____ mL}$

d.  $24 \text{ L} , 800 \text{ mL} - 19 \text{ L} , 510 \text{ mL} = \text{_____ L}, \text{_____ mL}$

**Solution** 

a.  $3,778 \text{ mL} = 3 \text{ L}, 778 \text{ mL}$

$4 \text{ L} + 3 \text{ L}, 778 \text{ mL} = 7 \text{ L}, 778 \text{ mL}$

**Notes for parents :**

- Later in this concept, your child will understand that when moving from a capacity unit to another he/she has to multiply by 10 , 100 , 1,000 , .....

b.  $2\text{ L}, [340 \text{ mL} + 900 \text{ mL}] = 2\text{ L} + (340 + 900) \text{ mL}$

$$= 2\text{ L} + 1,240 \text{ mL} = 2\text{ L} + ([1,000] + 240) \text{ mL}$$

$$\stackrel{(+)}{=} \downarrow 1\text{ L}$$

$$= 3\text{ L}, 240 \text{ mL}$$

c.  $5\text{ L} = 5 \times 1,000 = 5,000 \text{ mL}$

$$5,000 \text{ mL} - 2,570 \text{ mL} = [5,000 - 2,570] \text{ mL}$$

$$= 2,430 \text{ mL} = ([2,000] + 430) \text{ mL} = 2\text{ L}, 430 \text{ mL}$$

$$\stackrel{(-)}{=} \downarrow 2\text{ L}$$

d.  $(24 \text{ L}) [800 \text{ mL}] (19 \text{ L}) [510 \text{ mL}]$

$$= (24 - 19) \text{ L}, [800 - 510] \text{ mL}$$

$$= 5 \text{ L}, 290 \text{ mL}$$

**Example 4**

A truck consumed 1L, 560 mL of gas in the first hour and 1L, 840 mL in the second hour. Write the amount of gas consumed by the truck in liters and milliliters in the two hours.

**Solution**

The amount =  $[1\text{ L}, 560 \text{ mL}] + [1\text{ L}, 840 \text{ mL}]$

$$= [1+1]\text{ L} + (560 + 840) \text{ mL}$$

$$= 2\text{ L} + 1,400 \text{ mL}$$

$$= 2\text{ L} + ([1,000] + 400) \text{ mL}$$

$$\stackrel{(+)}{=} \downarrow 1\text{ L}$$

$$= 3\text{ L}, 400 \text{ mL}$$

**Another Solution :**

$$1\text{ L}, 560 \text{ mL} = 1,000 \text{ mL} + 560 \text{ mL} = 1,560 \text{ mL}$$

$$1\text{ L}, 840 \text{ mL} = 1,000 \text{ mL} + 840 \text{ mL} = 1,840 \text{ mL}$$

The amount =  $1,560 \text{ mL} + 1,840 \text{ mL}$

$$= 3,400 \text{ mL}$$

$$= ([3,000] + 400) \text{ mL} = 3\text{ L}, 400 \text{ mL}$$

$$\stackrel{(+)}{=} \downarrow 3\text{ L}$$

**check your understanding**

Which number of units is greater, the capacity of a container given in liters or milliliters ? Explain.

\* Let your child explain the relation between the metric capacity units " L , mL".

# Exercise 15

## 3-3 Fill It Up "Metric Units Of Capacity"

REMEMBER

UNDERSTAND

APPLY

PROBLEM SOLVING

From the school book

### 1. Complete.

- a.  $\square 6 \text{ L} = \text{ } \text{mL}$
- c.  $\square 9 \text{ L} = \text{ } \text{mL}$
- e.  $50 \text{ L} = \text{ } \text{mL}$
- g.  $29,000 \text{ mL} = \text{ } \text{L}$
- i.  $\text{ } \text{mL} = 73 \text{ L}$

- b.  $\square 3 \text{ L} = \text{ } \text{mL}$
- d.  $25 \text{ L} = \text{ } \text{mL}$
- f.  $4,000 \text{ mL} = \text{ } \text{L}$
- h.  $\square \text{ } \text{L} = 10,000 \text{ mL}$
- j.  $\text{ } \text{L} = 560,000 \text{ mL}$

### 2. Find each missing number.

a.	<input type="text"/> 6,360 mL
	<input type="text"/> L <input type="text"/> mL

c.	<input type="text"/> mL
	9 L <input type="text"/> 900 mL

- e.  $8 \text{ L}, 500 \text{ mL} = \text{ } \text{mL}$
- g.  $84 \text{ L}, 84 \text{ mL} = \text{ } \text{mL}$
- i.  $6 \text{ L}, 6 \text{ mL} = \text{ } \text{mL}$
- k.  $\text{ } \text{mL} = 61 \text{ L}, 254 \text{ mL}$
- m.  $\text{ } \text{L}, \text{ } \text{mL} = 541,541 \text{ mL}$
- o.  $\text{ } \text{mL} = 7 \text{ L}, 400 \text{ mL}$

b.	<input type="text"/> 9,425 mL
	<input type="text"/> L <input type="text"/> mL

d.	<input type="text"/> mL
	25 L <input type="text"/> 25 mL

- f.  $\square 19 \text{ L}, 324 \text{ mL} = \text{ } \text{mL}$
- h.  $5,700 \text{ mL} = \text{ } \text{L}, \text{ } \text{mL}$
- j.  $2,222 \text{ mL} = \text{ } \text{L}, \text{ } \text{mL}$
- l.  $9,090 \text{ mL} = \text{ } \text{L}, \text{ } \text{mL}$
- n.  $\square 4 \text{ L}, 234 \text{ mL} = \text{ } \text{mL}$
- p.  $\text{ } \text{mL} = 8 \text{ L}, 910 \text{ mL}$

### 3. Fill in blanks.

- a.  $5 \text{ L} + 6,000 \text{ mL} = \text{ } \text{mL}$
- c.  $\square 8 \text{ L} - 2,000 \text{ mL} = \text{ } \text{L}$
- e.  $1 \text{ L}, 500 \text{ mL} + 3 \text{ L}, 200 \text{ mL} = \text{ } \text{mL}$
- f.  $\square 23 \text{ L}, 244 \text{ mL} + 2 \text{ L}, 50 \text{ mL} = \text{ } \text{mL}$
- g.  $\square 13 \text{ L}, 200 \text{ mL} - 3 \text{ L}, 100 \text{ mL} = \text{ } \text{mL}$
- h.  $4 \text{ L}, 540 \text{ mL} - 4 \text{ L}, 95 \text{ mL} = \text{ } \text{mL}$
- i.  $4 \text{ L}, 375 \text{ mL} + 5 \text{ L}, 625 \text{ mL} = \text{ } \text{L}$

4. List 6 L, 4,000 mL, 13,000 mL, 5 L from least to greatest.

5. Answer each of the following.

a. A car is filled with 45 liters of petrol. How many milliliters would that be?

b. A family drank 1 liter, 500 milliliters of orange juice at breakfast. If there were 3 liters of orange juice before breakfast, how much orange juice is left?

c. Mostafa drinks 200 mL of milk daily, what is the amount of milk he drinks in liter for 10 days?

d. Doha's fish tank contains 5 liters, 245 milliliters of water. If the tank can hold 10 liters of water, how much more water does she need to fill the tank?

e. A car was filled with 20 liters, 500 milliliters of petrol. At the end of the day, there were 15 liters, 250 milliliters left in the tank. How much petrol was used?

f. Use the recipe that follows to answer the questions.

Sobia Ingredients :

- 100 g raw short grain rice
- 500 mL water
- 750 mL cold milk
- 100 g caster sugar
- 5 mL vanilla
- 500 mL coconut milk

1. Which ingredients are measured by mass?

2. Which ingredients are measured by capacity?

3. What is the total amount of liquid ingredients in the drink in milliliters? In liters?

# Multiple Choice Questions

**D**

Choose the correct answer:

1. The suitable capacity is

- A. 5 mL
- B. 300 mL
- C. 5 L
- D. 300 L



2.  $8\text{ L} 27\text{ mL} =$

- A. 8,270
- B. 82,700
- C. 8,027
- D. 8,207

mL

3.  $6\text{ L} + 4,000\text{ mL} =$

- A. 10
- B. 46
- C. 64
- D. 640

4.  $7\text{ L} 900\text{ mL} - 4\text{ L} 400\text{ mL} =$

- A. 3,400
- B. 2,500
- C. 2,400
- D. 3,500

mL

5.  $29,907\text{ mL} =$

L. mL

- A. 29,97
- B. 29,970
- C. 2,907
- D. 29,907

6. Ahmed drunk 200 mL of apple juice from an apple juice bottle of 1 liter, what is the amount of left juice?

- A. 100 mL
- B. 300 mL
- C. 800 mL
- D. 1,200 mL

7. A water jug holds 8 liters. How many milliliters does it hold?

- A. 80
- B. 800
- C. 8,000
- D. 80,0000

8. Zahra poured 2 liters of milk into a mixing bowl. How many milliliters of milk did she pour?

- A. 20
- B. 200
- C. 2,000
- D. 20,000

9. Fatima poured liquid into a beaker labeled with both liters and milliliters. Which observation could Fatima have made?

- A. There are 10 millilitres in 1 litre.
- B. There are 100 millilitres in 1 litre.
- C. There are 1,000 millilitres in 1 litre.
- D. There are 10,000 millilitres in 1 litre

10. A company sells laundry soap to businesses

in containers of the following sizes.

Container A : 3,000 liter

Container B : 3,000 milliliters

Container C : 300 liters

Which list shows the containers from least to greatest capacity?

- A. Container A, Container B, Container C
- B. Container A, Container C, Container B
- C. Container C, Container B, Container A
- D. Container B, Container C, Container A

## 3-4 Measurement and Unit Conversions

### Learn

How do you change from one metric unit of measure to another?

### Problem

In a training for a marathon, Maged ran a distance of 5 kilometres. How many meters did he run?

**Think :**  $5 \text{ km} = \underline{\hspace{2cm}} \text{ m}$

A kilometer is a larger unit than a meter.

When you change **large units to smaller units**, you need more of the smaller units, so **multiply by 10, 100 or 1,000**

The distance in kilometers	$\times$	meters in 1 kilometer	=	The distance in meters
5	$\times$	1,000	=	5,000

So, Maged ran 5,000 meters.

When you change **smaller units to larger unit**, you need fewer of the large units, so **divide by 10, 100 or 1,000**

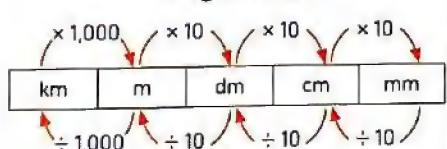
For example : 300 millimeters = **centimeters** Since a millimeter is a smaller unit than a centimeter, divide.

millimeters	$\div$	millimeters in 1 centimeter	=	centimeters
300	$\div$	10	=	30

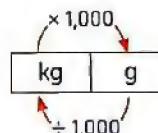
So, 300 millimeters = 30 centimeters.

### Remember

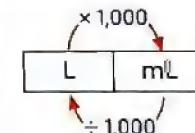
Converting metric length units



Converting metric mass units



Converting metric capacity units



#### Notes for parents :

- Ask your child to rewrite 2 liters in milliliters.

**Example 1**

Fill in the blanks.

a.  $6 \text{ m} = \underline{\hspace{2cm}} \text{ dm}$       b.  $80 \text{ kg} = \underline{\hspace{2cm}} \text{ g}$       c.  $2,000 \text{ mL} = \underline{\hspace{2cm}} \text{ L}$

**Solution**

a.  $6 \text{ m} = 6 \times 10 = 60 \text{ dm}$       b.  $80 \text{ kg} = 80 \times 1,000 = 80,000 \text{ g}$   
c.  $2,000 \text{ mL} = 2,000 \div 1,000 = 2 \text{ L}$

**Enrich your knowledge**

- Changing units in the metric system is like moving from one place-value position to another.

	$\times 10$	$\times 10$	$\times 10$	$\times 10$	$\times 10$	$\times 10$	
	kilo-thousands	hecto-hundreds	deca-tens	base-ones	deci- $\frac{1}{10}$	centi- $\frac{1}{100}$	milli- $\frac{1}{1,000}$
Units of length	Kilometer km	Hectometer hm	Decameter dam	Meter m	Decimeter dm	Centimeter cm	Millimeter mm
Units of mass	Kilogram kg	Hectogram hg	Decagram dag	Gram g	Decigram dg	centigram cg	Milligram mg
Units of capacity	Kiloliter kL	Hectoliter hL	Decaliter daL	Liter L	Deciliter dL	centiliter cL	Milliliter mL

$\downarrow \div 10$        $\downarrow \div 10$

**Example 2**

Complete.

a.  $4 \text{ hectograms} = \underline{\hspace{2cm}} \text{ decagrams.}$       b.  $6,000 \text{ mL} = \underline{\hspace{2cm}} \text{ dL}$

**Solution**

- a. To change hectogram to decagram, move one place to the right, so multiply by 10.

$4 \text{ hectograms} = 4 \times 10 = 40 \text{ decagrams.}$

- b. To change milliliter to deciliter, move two places to the left, so divide by 100.

$6,000 \text{ mL} = 6,000 \div 100 = 60 \text{ dL}$

**Check**

your understanding

Fill in the blanks.

a. $7,000 \text{ mL} = \underline{\hspace{2cm}} \text{ L}$	b. $500 \text{ cm} = \underline{\hspace{2cm}} \text{ m}$	c. $18 \text{ kg} = \underline{\hspace{2cm}} \text{ g}$
d. $8 \text{ km} = \underline{\hspace{2cm}} \text{ dm}$	e. $2 \text{ L} = \underline{\hspace{2cm}} \text{ cL}$	f. $4,000 \text{ g} = \underline{\hspace{2cm}} \text{ dg}$

• To change larger units to smaller units, multiply by 10 for each place you move to the right.

• To change smaller units to larger units, divide by 10 for each place you move to the left.

# Exercise 16

## 3-4 Measurement and Unit Conversions

REMEMBER

UNDERSTAND

APPLY

PROBLEM SOLVING

From the school book

1. Choose the smaller unit to measure.

- a. dm or mm
- b. L or dL
- c. mg or g
- d. km or m
- e. kg or g
- f. cL or L

2. Choose the greater unit to measure.

- a. mL or L
- b. g or mg
- c. m or dm
- d. hg or kg
- e. cm or dm
- f. kL or L

3. Complete. Tell whether you multiply or divide.

- |   |  |
|---|--|
| a. $35 \text{ kg} = \underline{\hspace{2cm}} \text{ g}$   | b. $\square 70 \text{ km} = \underline{\hspace{2cm}} \text{ hm}$ |
| c. $8 \text{ kL} = \underline{\hspace{2cm}} \text{ L}$  | d. $5 \text{ hg} = \underline{\hspace{2cm}} \text{ g}$           |
| e. $\square 6,000 \text{ mL} = \underline{\hspace{2cm}} \text{ dL}$   | f. $100 \text{ dm} = \underline{\hspace{2cm}} \text{ m}$         |
| g. $2,300 \text{ L} \approx \underline{\hspace{2cm}} \text{ hL}$  | h. $\square 40 \text{ g} = \underline{\hspace{2cm}} \text{ dag}$ |
| i. $17 \text{ cg} = \underline{\hspace{2cm}} \text{ mg}$  | j. $9,000 \text{ mL} = \underline{\hspace{2cm}} \text{ L}$       |
| k. $7 \text{ km} = \underline{\hspace{2cm}} \text{ dm}$   |  |
| l. $\square 200 \text{ centimeters is equivalent to } \underline{\hspace{2cm}} \text{ meters or } \underline{\hspace{2cm}} \text{ decimeters.}$ |  |
| m. $\square 4,000 \text{ grams is equivalent to } \underline{\hspace{2cm}} \text{ decagrams or } \underline{\hspace{2cm}} \text{ hectograms.}$  |  |
| n. $\square 2 \text{ liters is equivalent to } \underline{\hspace{2cm}} \text{ centiliters or } \underline{\hspace{2cm}} \text{ milliliters.}$  |  |
| o. $\underline{\hspace{2cm}} \text{ kg} = 8,000 \text{ g} = \underline{\hspace{2cm}} \text{ dg}$  |  |

4. Write with the correct unit.

- |   |  |
|---|--|
| a. $20 \text{ dm} = 200 \underline{\hspace{2cm}}$   | b. $40 \text{ g} \approx 400 \underline{\hspace{2cm}}$ |
| c. $6 \underline{\hspace{2cm}} = 60 \text{ dm}$     | d. $14 \text{ L} = 14,000 \underline{\hspace{2cm}}$    |
| e. $5,000 \underline{\hspace{2cm}} = 50 \text{ kg}$ | f. $8 \underline{\hspace{2cm}} = 80,000 \text{ mL}$    |
| g. $70 \underline{\hspace{2cm}} = 70,000 \text{ g}$ | h. $3 \underline{\hspace{2cm}} = 30,000 \text{ dm}$    |

5. Compare. Write ( $>$ ,  $<$  or  $=$ ) for each 

- |   |  |
|---|--|
| a. $8 \text{ m } \bigcirc 400 \text{ mm}$     | b. $40 \text{ mg } \bigcirc 10 \text{ g}$    |
| c. $900 \text{ L } \bigcirc 9 \text{ kL}$     | d. $2,000 \text{ cm } \bigcirc 20 \text{ m}$ |
| e. $10 \text{ dm } \bigcirc 1,000 \text{ mm}$ | f. $1 \text{ kg } \bigcirc 500 \text{ g}$    |

## 6. Complete.

a.  $4 \text{ km}, 7 \text{ m} =$       m

c.  $5,640 \text{ mL} =$       mL,      L

e.  $6 \text{ m}, 6 \text{ dm} =$       dm

g.  $6,088 \text{ g} =$       kg,      g

b.  $8 \text{ g}, 29 \text{ mg} =$       mg

d.  $9,885 \text{ mg} =$       g,

f.      dL =  $9 \text{ daL}, 99 \text{ dL}$       mg

h.  $2 \text{ kg}, 400 \text{ g} =$       g

7. Something measures 200 centimeters. How many decimeters? How many meters?  
 Decimeters: \_\_\_\_\_ Meters: \_\_\_\_\_

8. An ant traveled 8 meters from its nest to forage for food. How far is this in centimeters?  
 \_\_\_\_\_

9. Sameh drinks 8 glasses of water each day. Each glass contains 300 milliliters.  
 Hend drinks 2 liters of water each day. Who drinks more water?

\_\_\_\_\_

\_\_\_\_\_

10. A colony of army ants has been known to consume 2 kilograms of food in a month.  
 How many grams of food are consumed by the colony?

\_\_\_\_\_

11. In the first 3 weeks of their science project, Bassem's plant grew 197 millimeters and Mina's plant grew 3 dm. Which plant is longer?

\_\_\_\_\_

\_\_\_\_\_

12. Two hundred thousand ants drink 1 liter of water. How many milliliters of water is this?

\_\_\_\_\_

13. Ahmed and Mona collected rocks for science class. Ahmed's rock weighed 3 kg and Mona's rock weighed 2,500 g. Whose rock weighed more?

\_\_\_\_\_

\_\_\_\_\_

14. Kristen and Sara need string for their projects. Kristen needs 25 dm of string, and Sara needs 340 cm of string. How much string do both girls need in centimeters?

\_\_\_\_\_

\_\_\_\_\_

## 15. What's the Error?

• Tony is 2 m tall with shoes. Without shoes, Tony is 3 cm shorter. He wrote his height without shoes as 1,997 cm. Describe his error. Write the correct height.

\_\_\_\_\_

\_\_\_\_\_

## Multiple Choice Questions

Choose the correct answer.

1.  $8 \text{ hm} = \underline{\hspace{2cm}} \text{ m}$

- A. 80
- B. 800
- C. 8,000
- D. 80,000

3.  $7 \text{ L} = \underline{\hspace{2cm}} \text{ mL}$

- A. kL
- B. daL
- C. dL
- D. mL

5. Which of the following is the greatest mass?

- A. 50 hg
- B. 6 kg
- C. 800 dag
- D. 8,000 dg

7.  $8,200 \text{ mL} = \underline{\hspace{2cm}} \text{ L}, \underline{\hspace{2cm}} \text{ mL}$

- A. 8,2
- B. 8,20
- C. 80,20
- D. 8,200

9. A piece of wood is 2 meters long. What is its length in centimeters?

- A. 2
- B. 20
- C. 200
- D. 2,000

10. The fuel tank of a car is filled with 35 liters of gasoline. How many milliliters are used to fill

the tank?

- A. 350
- B. 3,500
- C. 35,000
- D. 350,000

2.  $50 \text{ g} = \underline{\hspace{2cm}} \text{ mg}$

- A. 5
- B. 500
- C. 5,000
- D. 50,000

4.  $4 \text{ m}, 16 \text{ dm} = \underline{\hspace{2cm}} \text{ dm}$

- A. 416
- B. 4,160
- C. 56
- D. 4,016

6.  $7 \text{ dm} \underline{\hspace{2cm}} 700 \text{ mm}$

- A. <
- B. =
- C. >
- D. otherwise

8.  $4 \text{ kg}, 500 \text{ g} + 2 \text{ kg}, 200 \text{ g}$

- A. 6,300
- B. 6,700
- C. 2,700
- D. 2,300

## Concept 1 Assessment | Unit 3



1. Put (✓) to the correct answer and (✗) to the incorrect answer.

- a.  $6 \text{ km}, 6 \text{ m} = 66 \text{ m}$  [ ]
- b.  $1 \text{ L} = 100 \text{ mL}$  [ ]
- c.  $5,677 \text{ mm} = 5 \text{ m}, 677 \text{ mm}$  [ ]
- d.  $30 \text{ m} = 3 \text{ dm}$  [ ]
- e.  $5 \text{ L} > 5 \text{ dL}$  [ ]
- f.  $5 \text{ kg} + 4,000 \text{ g} = 9 \text{ kg}$  [ ]

2. Choose the correct answer.

- a.  $1 \text{ km} = 1,000$  \_\_\_\_\_  
 A. hm      B. dam      C. m      D. dm
- b.  $5 \text{ g} =$  \_\_\_\_\_ mg  
 A. 50      B. 500      C. 5,000      D. 50,000
- c.  $4,400 \text{ m} =$  \_\_\_\_\_ km, \_\_\_\_\_ m  
 A. 4,4      B. 4,40      C. 4,400      D. 40,40
- d.  $4 \text{ L} + 5,342 \text{ mL} =$  \_\_\_\_\_ mL  
 A. 9,342      B. 5,742      C. 5,382      D. 5,346
- e.  $7 \text{ g}, 35 \text{ mg} =$  \_\_\_\_\_ mg  
 A. 735      B. 7,035      C. 7,350      D. 70,350
- f.  $6 \text{ L}$  \_\_\_\_\_  $700 \text{ mL}$   
 A. <      B. >      C. =      D. otherwise

3. Complete.

- a.  $9,000 \text{ g}$  is equivalent to \_\_\_\_\_ kilograms.
- b.  $180 \text{ dm}$  is equivalent to \_\_\_\_\_ meters.
- c. \_\_\_\_\_ mL =  $600 \text{ L}$
- d.  $3 \text{ km} + 3,000 \text{ m} =$  \_\_\_\_\_ km
- e.  $11 \text{ kg}, 800 \text{ g} - 9 \text{ kg}, 520 \text{ g} =$  \_\_\_\_\_ kg, \_\_\_\_\_ g
- f.  $5 \text{ L} - 3,000 \text{ mL} =$  \_\_\_\_\_ L

4. Match the cards that have the same measurement.

- a. 3 L
- b. 3 kg
- c. 3 km
- d. 3 m

- 1. 3,000 m
- 2. 3,000 mm
- 3. 3,000 mL
- 4. 3,000 g

5. List 20 m , 2 km , 2,100 dm , 2,000 mm from least to greatest.

6. A bag of seeds weighs 2 kg. What is the weight of this bag in grams ?

7. Is the distance from your elbow to your wrist closer to 15 mm or 15 cm ?

8. David drinks 8 glasses of water each day. Each glass contains 300 milliliters.

Mostafa drinks 2 liters of water each day. Who drinks more water ?

9. An adult's body has about 5 liters of blood. How many milliliters of blood is this ?

10. If you walked 50 meters to a neighbor's house and then 50 meters back again.

Did you walk 1 kilometer ? Explain.

11. If the mass of a colony of ants is 38 kilograms, 27 grams, 27 grams,

Rewrite this mass in grams.

12. Hassan practices running and needs to drink 400 mL of water during training 5 times a day.

How many liters of water does Hassan drink in the day ?

Concept

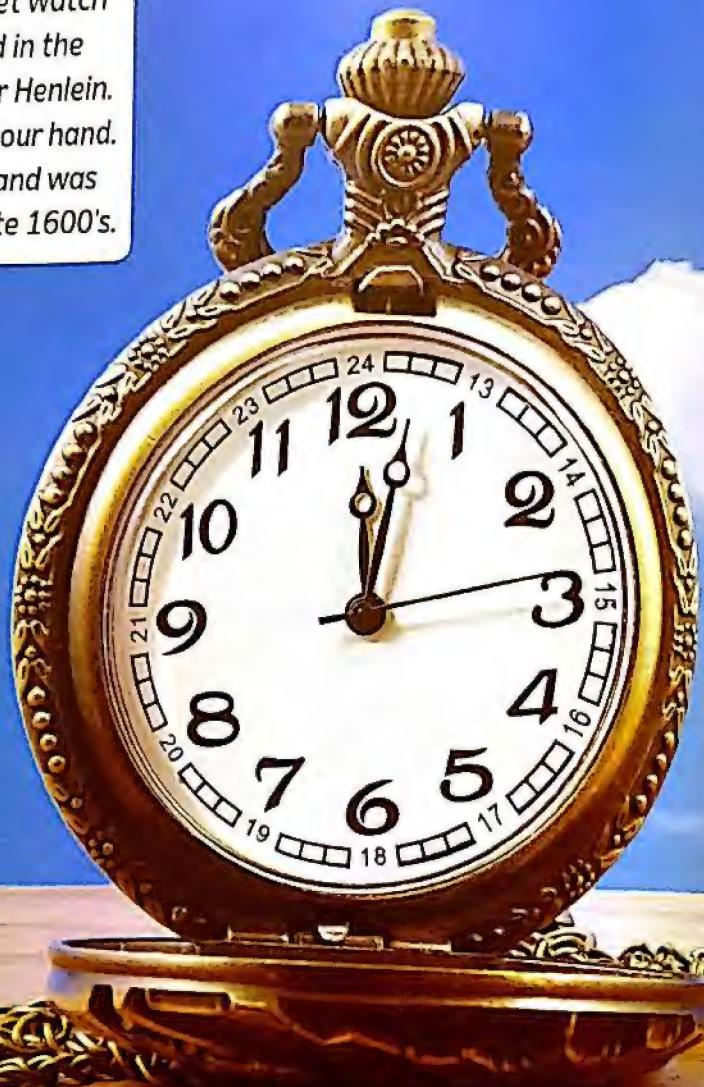
2

# Time and Scaled Measurements



## Fast Fact

The first pocket watch was invented in the 1500's by Peter Henlein. It only had an hour hand. The minute hand was added in the late 1600's.



## Concept Overview

### In concept 2 :

Time and Scaled Measurements, students tell time to the minute, solve problems with elapsed time, and represent measurement data with a scale. These skills and concepts are a challenging extension and application of what students previously learned in Primary 2 and 3.

Lesson No.	Lesson Name	Vocabulary Terms	Learning objectives
Lesson 5	3-5 What time is it?	Analog - Decade - Digital - Elapsed - Ratio Table	<ul style="list-style-type: none"><li>Students will tell time to the minute.</li><li>Students will explain relationships between units of time.</li></ul>
	3-6 How long does it take?	Conversion - Elapsed time - Open number line	<ul style="list-style-type: none"><li>Students will explain elapsed time.</li><li>Students will solve elapsed time problems.</li><li>Students will explain the strategies they use to solve elapsed time problems.</li></ul>
Lesson 6	3-7 Scaled Measurements	Line plot - Scale	<ul style="list-style-type: none"><li>Students will create line plots to represent given data.</li><li>Students will select an appropriate key and scale for a line plot.</li><li>Students will write questions that can be answered by their line plots.</li></ul>

## Lesson

# 5

# 3-5 What Time Is It ? 3-6 How Long Does It Take ?



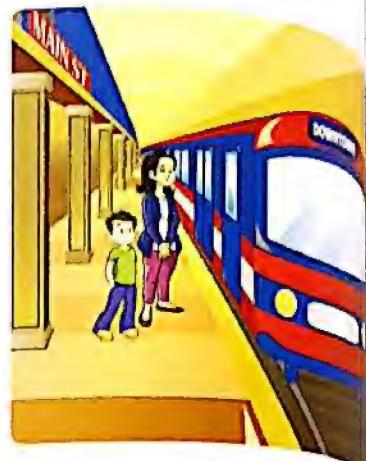
## Learn What Time Is It ?

This morning, Amgad's family will take a ride on the railroad. The train leaves at 11 o'clock.

Amgad's family is in the station waiting room. The time right now is shown on the clock

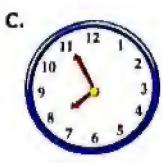
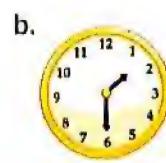
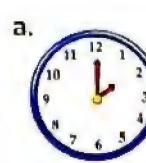


Has Amgad's family missed the train ?  
The time on the clock is 10:50 or 10 to 11.  
So, Amgad's family has not missed the train.



## Example 1

Write the time shown on the clock in two different ways :



## Solution

- |                           |                                |
|---------------------------|--------------------------------|
| a. It is 2 o'clock , 2:00 | b. It is half past 1 , 1:30    |
| c. It is 5 to 8 , 7:55    | d. It is quarter past 9 , 9:15 |

## Units of Measuring Time

- Week , day , hour , minute , second , these units are used to measure time.

$$1 \text{ Week} = 7 \text{ days} \quad | \quad 1 \text{ day} = 24 \text{ hours (hr)} \quad | \quad 1 \text{ hour} = 60 \text{ minutes (min)}$$

$$1 \text{ minute} = 60 \text{ seconds (sec)}$$

### Notes for parents :

- Ask your child to count from 7:00 to 8:00 using 5-minutes intervals (7:00 , 7:05 , 7:10 and so on).

## 1. Relating Weeks and Days

The table helps you see how weeks and days are related.

1 week = 7 days						
Week	1	2	3	4	5	...
Day	7	14	21	28	35	...

+7      +7      +7      +7



## Example 2

How many days are there in.

a. 5 weeks.

b. 13 weeks

### Solution

a. You can use multiplication :  $5 \text{ weeks} = 5 \times 7 = 35 \text{ days}$ .

or You can use repeated addition :  $5 \text{ weeks} = 7 + 7 + 7 + 7 + 7 = 35 \text{ days}$ .

b.  $13 \text{ weeks} = 13 \times 7 = 7 \times (10 + 3)$

$$= 7 \times 10 + 7 \times 3 = 70 + 21 = 91 \text{ days}$$

Think :

1 week = 7 days

"Distributive property of multiplying"

## 2. Relating Days and Hours

The table helps you see how days and hours are related.

1 day = 24 hours						
Day	1	2	3	4	5	...
Hour	24	48	72	96	120	...

+24      +24      +24      +24



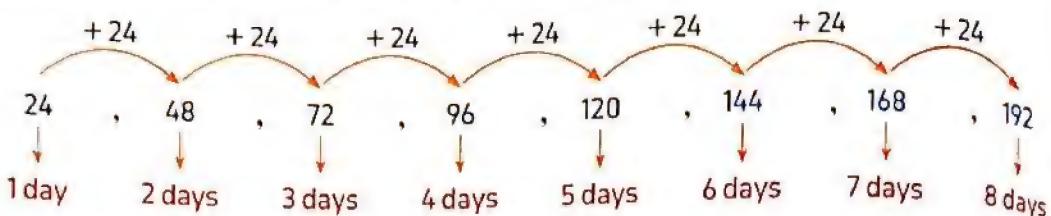
\*Remind your child the distributive property of multiplying.

**Example 3**

How many hours are there in 8 days?

**Solution**

Extend the previous pattern by using its pattern rule  $+ 24$



So, 8 days = 192 hours.

Another way using multiplication

$$8 \text{ days} = 8 \times 24 = 8 \times (20 + 4)$$

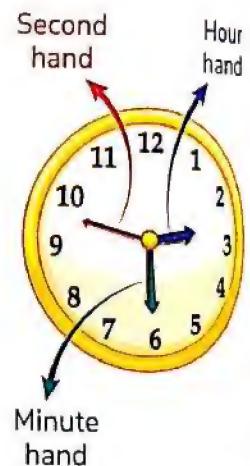
"Distributive property of multiplying"

$$= [8 \times 20] + [8 \times 4] = 160 + 32 = 192 \text{ hours.}$$

**3. Relating [hours and minutes] – [minutes and seconds]**

The following tables help you see how hours and minutes are related, and how minutes and seconds are related.

1 hour = 60 minutes						
Hour	1	2	3	4	5	...
Minute	60	120	180	240	300	...
	+60	+60	+60	+60		
Minute	60	120	180	240	300	...
	+60	+60	+60	+60		

**Notes for parents :**

- Ask your child how many hours there are in a week.

**Example 4**

Complete.

a. 8 hours = \_\_\_\_\_ minutes.

b. 9 minutes = \_\_\_\_\_ seconds.

**Solution** 

a. [Think: 1 hour = 60 minutes]  
8 hours =  $8 \times 60 = 480$  minutes.

b. [Think: 1 minute = 60 seconds]  
9 minutes =  $9 \times 60 = 540$  seconds.

**Math tip**

You can multiply  $8 \times 6 = 48$   
and put the zero at  
the end "480"

**Example 5**

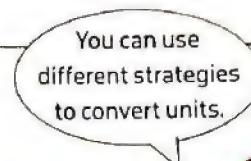
Find the missing numbers.

a. 4 weeks, 2 days = \_\_\_\_\_ days.

b. 5 days, 5 hours = \_\_\_\_\_ hours.

c. 3 hours, 20 minutes = \_\_\_\_\_ minutes.

d. 2 minutes, 30 seconds = \_\_\_\_\_ seconds.



You can use  
different strategies  
to convert units.

**Solution** 

a.  $4 \text{ weeks} = 4 \times 7 = 28 \text{ days}$ .

So, 4 weeks, 2 days =  $28 \text{ days} + 2 \text{ days}$   
= 30 days.

b.  $5 \text{ days} = 5 \times 24 = 5 \times (20 + 4)$   
 $= 100 + 20 = 120 \text{ hours}$

So, 5 days, 5 hours =  $120 \text{ hours} + 5 \text{ hours}$   
= 125 hours.

c.  $3 \text{ hours} = 3 \times 60 = 180 \text{ minutes}$ .

So, 3 hours, 20 minutes  
= 180 minutes + 20 minutes = 200 minutes.

d.  $2 \text{ minutes} = 2 \times 60 = 120 \text{ seconds}$

So, 2 minutes, 30 seconds  
= 120 seconds + 30 seconds = 150 seconds.

**Check your understanding**

Fill in the blanks.

- |   |                                    |
|---|------------------------------------|
| a. 5 hours, 10 minutes = _____ minutes.   | b. 3 days, 10 hours = _____ hours. |
| c. 4 minutes, 11 seconds = _____ seconds. | d. 2 weeks, 2 days = _____ days.   |

\*Remind your child how to multiply by multiples of 10.

## Learn How long does it take ? (Elapsed time)

Elapsed time is the time that passes from the start to the end of an activity.

### Example 6

Laila entered a shopping mall, spent 2 hours .  
40 minutes shopping , and spent 50 minutes  
at lunch in a restaurant, and then left the mall.  
How long did Laila spend in the mall ?



### Solution

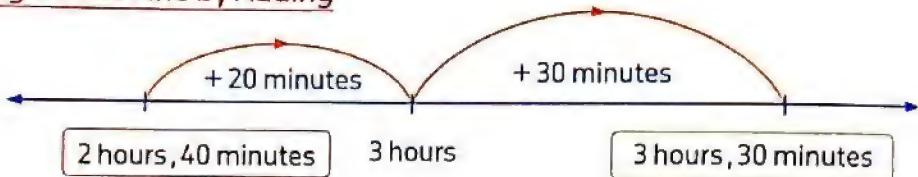
There are different ways to calculate the elapsed time.

#### 1. Add Times

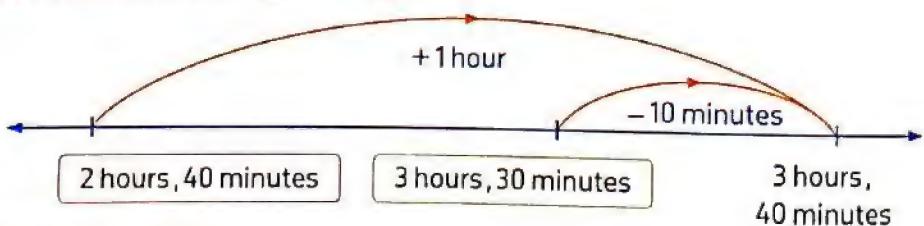
Hours : Minutes	
2 : 40	
+                   :	50
2 : 90	[Rename 90 minutes as 1 hour 30 minutes] 60 minutes = 1 hour

So, 2 hours + 1 hour + 30 minutes = 3 hours , 30 minutes

#### 2. Using a Time Line by Adding



#### 3. Using a Time Line by Subtracting



#### Notes for parents :

- Help your child to find the elapsed time using different ways.

4. Convert Units

[Think : 1 hour = 60 minutes]

So, 2 hours =  $2 \times 60 = 120$  minutes.

Then 2 hours, 40 minutes + 50 minutes = 120 minutes + 40 minutes + 50 minutes = 210 minutes

Then, 210 minutes = 180 minutes + 30 minutes = 3 hours , 30 minutes

**Example 7**

Yasser finds that a cinema show is full when he arrives at 7:50 A.M. next show begins at 9:30 A.M.  
How long will he have to wait for the next show?

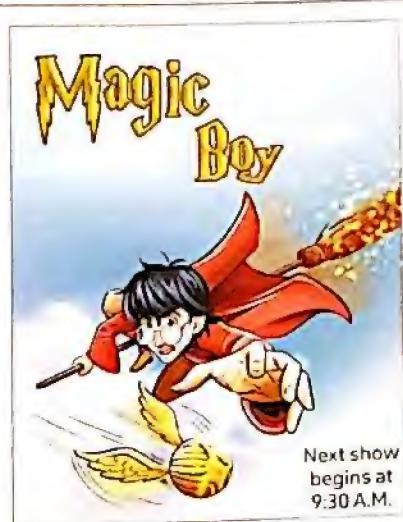
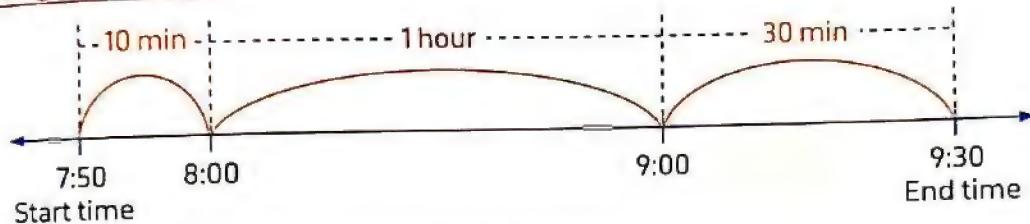
**Solution**

There are different ways to calculate the elapsed time.

1. Subtract Times

$$\begin{array}{r}
 \text{Hours} : \text{Minutes} \\
 \begin{array}{r}
 8 : 90 \\
 + 60 \\
 \hline
 9 : 30 \\
 - 7 : 50 \\
 \hline
 1 : 40
 \end{array}
 \end{array}$$

So, he will wait 1 hour , 40 minutes for the next show.

2. Using a Time Line

So, he will wait 1 hour , 40 minutes for the next show.

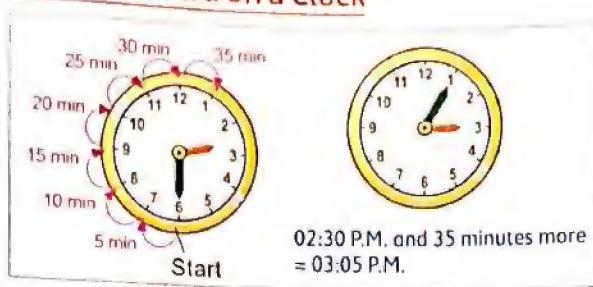
**Example 8**

Bassem left school at 2:30 P.M. and arrived home 35 minutes later.

What time did Bassem arrive home ?

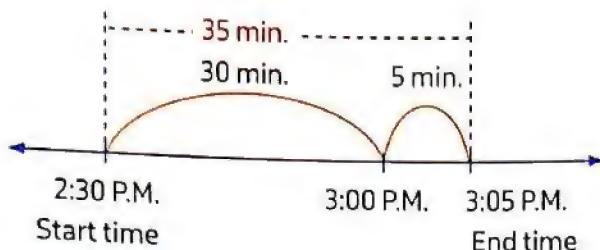


\* Ask your child what time will be 2 hours after 11:35 A.M.

**Solution****1. Count Forward on a Clock****Math tip**

When counting forward on a clock, increase one hour for each cross on 12.

So, Bassem arrived home at 3:05 P.M.

**2. Using a Time Line**

So, Bassem arrived home at 3:05 P.M.

**Example 9**

Calculate.

a.  $3:15 + 6:20 = \underline{\hspace{2cm}}$

b.  $5:37 + 50 \text{ minutes} = \underline{\hspace{2cm}}$

c.  $7:35 - 40 \text{ minutes} = \underline{\hspace{2cm}}$

**Solution**

a. Hours Minutes

$$\begin{array}{r} 3 : 15 \\ + 6 : 20 \\ \hline 9 : 35 \end{array}$$

Another Solution

$$\begin{array}{c} \text{Hours} \\ \curvearrowright \\ 3 : 15 + 6 : 20 = [3 + 6] : [15 + 20] \\ \text{Minutes} \quad \quad \quad = 9 : 35 \end{array}$$

You can use different ways to calculate each one.



b. Hours Minutes

$$\begin{array}{r} 5 : 37 \\ + \quad : 50 \\ \hline \cancel{5} : 87 \\ \quad : 27 \end{array}$$

$$\begin{aligned} 87 \text{ min} &= 60 \text{ min} + 27 \text{ min} \\ &= 1 \text{ hr} + 27 \text{ min} \end{aligned}$$

c. Hours Minutes

$$\begin{array}{r} \cancel{7} : 35 \\ - \quad : 40 \\ \hline 6 : 55 \end{array}$$

**Check your understanding**

Peter completed a bike ride 3 hours and 26 minutes after he started. He started the bike ride at 8:15 A.M. At what time did he finish?

**Notes for parents :**

- Ask your child how many hours and minutes pass from the time he/she leaves for school until he/she returns home.

# Exercise 17

## 3-5 What Time Is It ?

## 3-6 How Long Does It Take ?

REMEMBER

UNDERSTAND

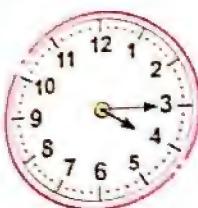
APPLY

PROBLEM SOLVING

From the school book

1. Write the time.

a.



\_\_\_\_\_ : \_\_\_\_\_

b.



\_\_\_\_\_ : \_\_\_\_\_

c.



\_\_\_\_\_ : \_\_\_\_\_

2. Write the time in two ways.

a.



\_\_\_\_\_ : \_\_\_\_\_

It's \_\_\_\_\_

b.



\_\_\_\_\_ : \_\_\_\_\_

It's \_\_\_\_\_

c.



\_\_\_\_\_ : \_\_\_\_\_

It's \_\_\_\_\_

3. Complete each of the following tables.

Week	Day
1	7
2	
3	
4	
5	
6	
7	
8	
9	
10	

Day	Hour
1	24
2	
3	
4	
5	
6	
7	
8	
9	
10	

Hour	Minute
1	60
2	
3	
4	
5	
6	
7	
8	
9	
10	

Minute	Second
1	60
2	
3	
4	
5	
6	
7	
8	
9	
10	

## 4. Solve the conversion problems.

- a.  10 hours , 30 minutes = \_\_\_\_\_ minutes.
- b. 3 weeks , 3 days = \_\_\_\_\_ days.
- c.  6 minutes , 15 seconds = \_\_\_\_\_ seconds.
- d.  4 days , 20 hours = \_\_\_\_\_ hours.
- e.  4 weeks , 2 days = \_\_\_\_\_ days.
- f. 7 hours , 20 minutes = \_\_\_\_\_ minutes.
- g.  2 days , 12 hours = \_\_\_\_\_ hours.
- h.  5 minutes , 12 seconds = \_\_\_\_\_ seconds.
- i. 1 day , 10 hours = \_\_\_\_\_ hours.
- j.  10 hours , 7 minutes = \_\_\_\_\_ minutes.

## 5. Compute the time.

•

- |   |   |
|---|---|
| a. <input type="checkbox"/> 3 : 25 + 45 minutes = _____ | b. <input type="checkbox"/> 3 : 25 + 1 : 26 = _____ |
| c. 7 : 50 – 39 min = _____                              | d. <input type="checkbox"/> 5 : 43 – 1 : 25 = _____ |
| e. <input type="checkbox"/> 3 : 45 + 25 min = _____     | f. <input type="checkbox"/> 2 : 45 + 6 : 17 = _____ |
| g. 4 : 29 + 5 : 31 = _____                              | h. 8 : 20 – 17 min = _____                          |
| i. <input type="checkbox"/> 3 : 07 – 42 min = _____     | j. <input type="checkbox"/> 5 : 07 – 2 : 13 = _____ |

## 6. Find the elapsed time.

•

- |   |  |   |
|---|--|---|
| a. Start : 1 : 20 P.M.<br>End : 9 : 50 P.M. | b. Start : 6 : 40 A.M.<br>End : 10 : 17 A.M. | c. Start : 4 : 27 P.M.<br>End : 8 : 00 P.M. |
| d. From : 6 : 43 A.M.<br>To : 9 : 43 A.M.   | e. From : 6 : 15 A.M.<br>To : noon           | f. From : 11 : 40 A.M.<br>To : 1 : 20 P.M.  |

## 7. Answer the following.

a.  An average ant works for 19 hours a day. How many hours does an ant work in 3 days ?

---

b.  Amir's family used their computer for 3 hours on Saturday, 4 hours on Sunday and 5 hours on Monday. How many total minutes were they on the computer ? How many seconds ?

---

c.  A worker ant takes 240 naps a day. Each nap lasts 1 minute.  
About how many hours did the nap ant ?

---

d.  Use the life cycle of an ant to answer the questions that follow.

1. Once the queen ant lays eggs, it can take anywhere from 7 to 14 days for them to hatch into the larvae stage. If it takes 10 days for a species of ant eggs to hatch, how many hours would that be ?

---

2. Adult ants feed the larvae liquid and solid food which helps them to grow quickly. Most move into the next stage, pupae, in 6 - 12 days. If it takes a larvae 6 days and 13 hours, how many total hours will that be ?

---

3. The pupae are white and similar to adult ants with their legs and antennae folded by the body and covered by a white or brown colored cocoon. They emerge as adults somewhere between 9 and 30 days. If it takes the ant 21 days, how many weeks will that be ?

---

- e. Jana and Maha have 5 hours to watch three movies that last 1 hour and 22 minutes, 2 hours and 12 minutes; and 1 hour and 57 minutes.
1. Do the girls have enough time to watch all three movies ? How do you know ?
  
  
  
  
  
  2. The girls decide to just watch the two shortest movies. If they start watching them at 5 : 30 P.M., what time will their movies end ?
- f. 1. An ant's first nap of the day began at 7 : 45 A.M. and lasted for 60 seconds.
- What time did the ant wake up ?
- 
- 
- 
- 
2. The ant then worked in the colony for 3 hours and 13 minutes before its next nap. What time did the ant take his second nap ?
- 
- 
- 
- 
- g. A worker ant went out to find food for the colony. It left at 6 : 30 A.M. and returned at 7 : 42 A.M. How long was that ant looking for food ?
- 
- 
- 
- 
- h. **What's the Error?** Jim says the elapsed time from 7 : 35 A.M. to 8 : 45 P.M. is 1 hr 10 min.
- Describe his error. Write the correct answer.

## Multiple Choice Questions

**D**

choose the correct answer.



1. A. 1:07      B. 1:35      C. 2:07      D. 2:35

3. 5 weeks, 5 days = \_\_\_\_\_ days.  
A. 10      B. 25      C. 40      D. 50

5.  $8:15 + 3:50 =$   
A. 12:05      B. 8:05      C. 12:55      D. 9:12

7. Mai has worked on her sewing project 45 min each night for 4 nights. She plans to spend 4 hr on her project during one week. How much more time does she need to spend on her project?  
A. 1 hour      B. 2 hours      C. 3 hours      D. 4 hours

9. At 9:20 A.M. a teacher set a timer for 30 minutes quiet reading time. What time will it be when the timer rings?  
A. 9:50 P.M.      B. 9:50 A.M.      C. 9:10 A.M.      D. 10:05 P.M.

2. 7 hours = \_\_\_\_\_ minutes  
A. 70      B. 140      C. 420      D. 700

4.  $2:50 + 40 \text{ minutes} =$   
A. 2:10      B. 3:10      C. 2:54      D. 3:30

6.  $6:43 - 50 \text{ minutes} =$   
A. 6:53      B. 5:07      C. 5:53      D. 6:07

8. Sameh wants to know how many hours he has spent in school this year. If he has been in school 145 days, and each day he has spent 7 hr at school, how many hours has he been in school this year?  
A. 940      B. 1,015      C. 1,230      D. 2,150

10. On Saturday morning Peter began cutting the grass at 9:35 A.M. He finished at 10:43 A.M. How long did it take Peter to cut the grass?  
A. 1:08      B. 1:10      C. 2:08      D. 2:40

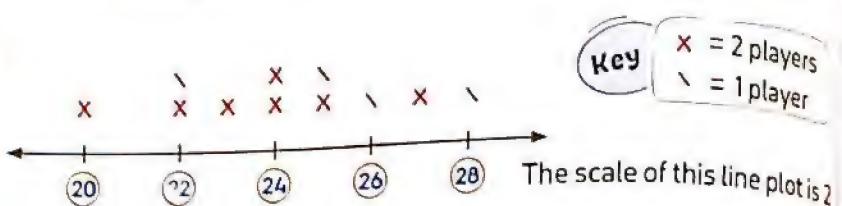
## 3-7 Scaled Measurements

**Learn** Line plot

Line plot is a graph that shows the data as X's above a number.

**Example 1**

Players' ages of handball team → What the line plot shows



- What does this line plot show ? Players' ages of handball team.
- What does each  $x$  represent ? 2 players
- What is the scale for this line plot ? 2
- How many players in the team are 24 years ? 4
- How many players in the team are 27 years ? 2
- How many players in the team are 22 years ? 3
- How many players are represented in all ? 18

**Learn** Measuring Capacity

Graduated cylinder is a graduated tool like ruler from 0 to 100 , and it holds 100 mL.

For example :

There is 60 mL of liquid in the graduated cylinder.

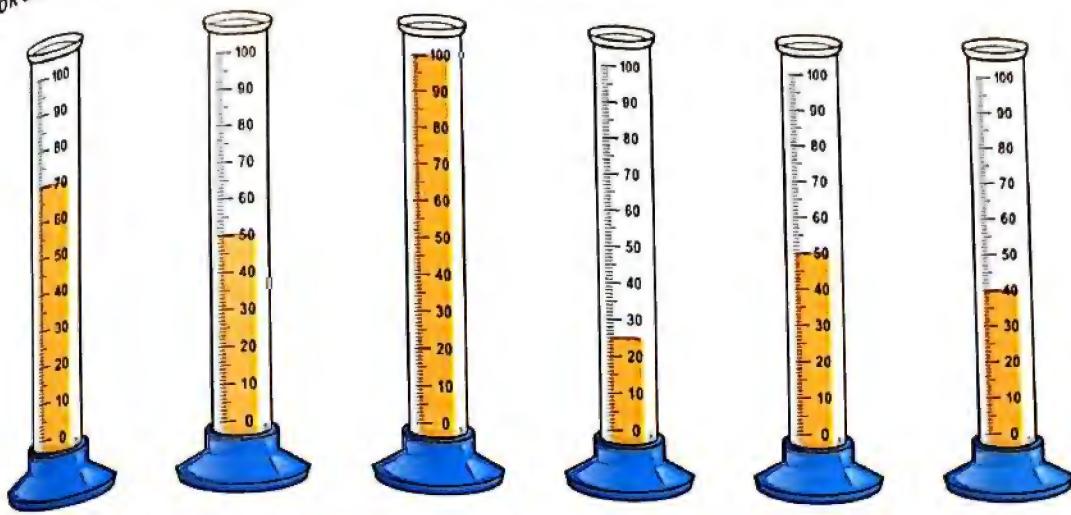


Notes for parents :

- Remind your child that a number line can start at any number and the numbers go on forever.

**Example 2**

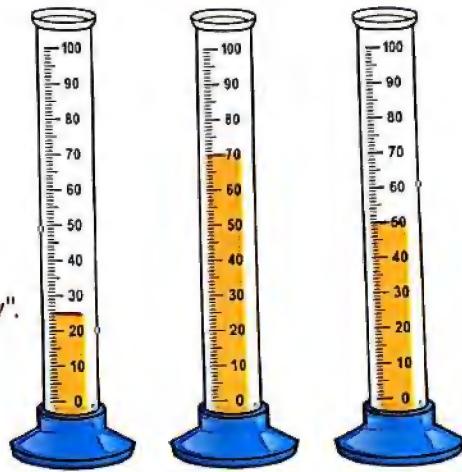
Look at the graduated cylinders and answer the questions.



- What title would you use to represent this data?
- What key would you use to represent this data?
- What scale would you use to represent this data?

**Solution**

- Liquid in the graduated cylinders "Answers may vary".
- One "Because it is a small set of information".
- 5 or 10

**Check your understanding**

A line plot has a scale of 3. The first number on the scale is 12. There are 5 marks on the line plot. What is the last number on the line?

---



---



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\* Help your child to choose a suitable title, for the previous graduated cylinders.

## Exercise 18

### 3-7 Scaled Measurements

REMEMBER

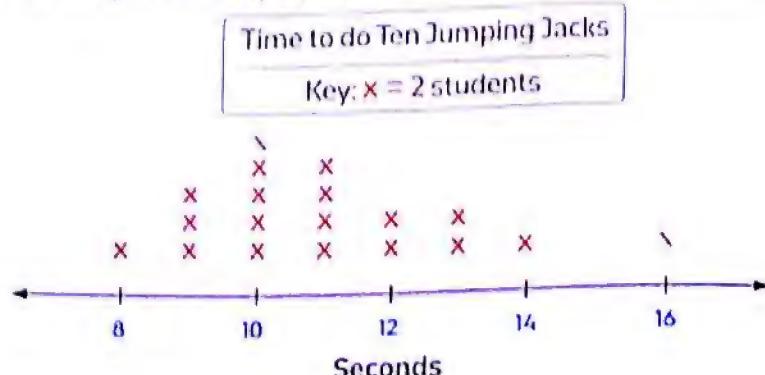
Counting

Shapes

PROBLEM SOLVING

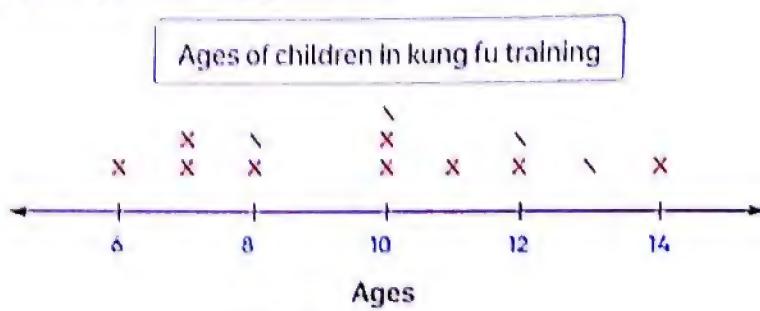
From the school book

1. Look at the line plot and be prepared to answer the following questions.



1. What does this line plot show?
2. What does each X represent?
3. How many students are represented?
4. What is the scale for this number line?

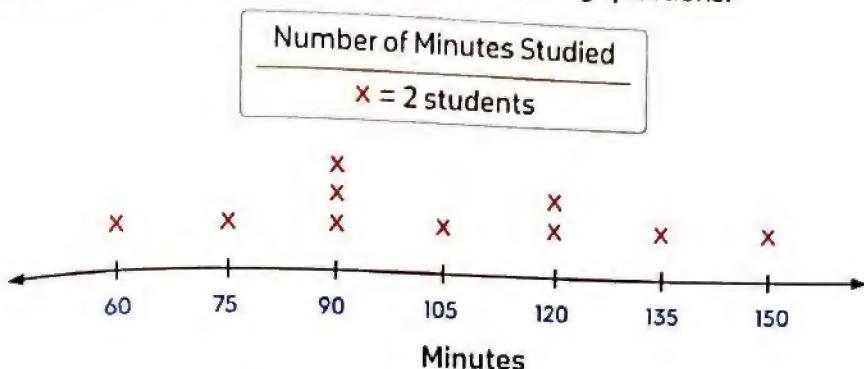
2. Use the line plot to answer the questions.



Each X stands for 2 children

- a. What does this line plot represent?
- b. What is the scale for this line plot?
- c. How many children in the training are 10 years?
- d. How many children are in kung fu training in all?
- e. What age is the greatest number of children?

3. Use the following line plot to answer the following questions.



1. What is being measured?

2. What is the scale for the number line?

For problems 3 - 5, record your answer in total minutes and then convert your answer to hours and minutes.

3. What was the least amount of time spent studying?

4. What was the most amount of time spent studying?

5. What was the most common amount of time spent studying?

4. The following table shows the masses of Ahmed's friends in a class in kilograms

46	40	44	47	42	42	41	46	43	47
42	44	47	40	44	46	43	48	46	44

a. Create a line plot that shows this measurement data.



b. What is the number of Ahmed's friends in the class?

c. How many friends of mass 42 kg?

d. What mass is the greatest number of friends?

5. Look at the table, which lists the length of a variety of ants around the world. Use it to answer the following questions.

Ant Type	Length (in mm)	Ant Type	Length (in mm)
Ghost ant	1	Red harvester ant	6
Thief ant	2	Siafu ant	7
Pharaoh ant	2	Carpenter ant	9
Argentine ant	3	Trap jaw ant	9
Fire ant	4	Panda ant	8
Sugar ant	5	Dinosaur ant	10
Crazy ant	3	Leaf cutter ant	10
African ant	10	Flying ant	18
Pavement ant	3	Bullet ant	24
Army ant	3	Cow ant	19
Black garden ant	4	Bull ant	40

1. Create a line plot that shows this measurement data.

Remember to include a title, key, and use a scaled number line to include all lengths. Then, answer the questions that follow.



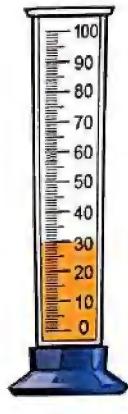
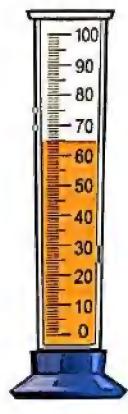
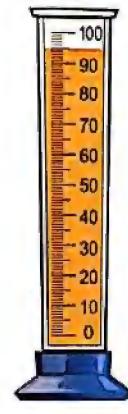
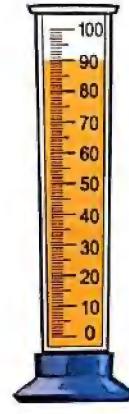
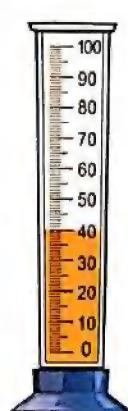
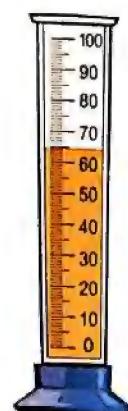
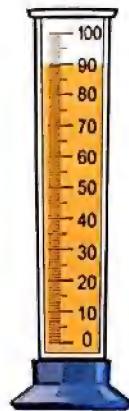
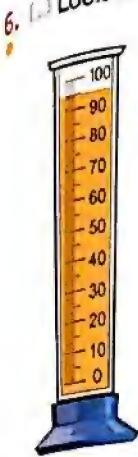
2. Why did you make your key the way you did?

3. Why did you make your scale the way you did?

4. Write three questions that could be answered by the data in this line plot.

5. If you added the Titanomyrma lubei that could be as large as 99 mm, how would that affect your line plot?

6. Look at the graduated cylinders and answer the questions.



1. What title would you use to represent this data ?

---

2. What key would you use to represent this data ?

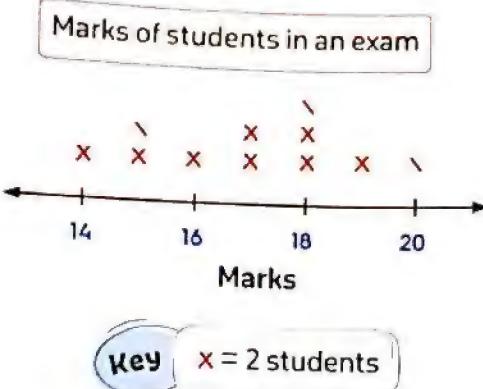
---

3. What scale would you use to represent this data ?

---

## Multiple Choice Questions

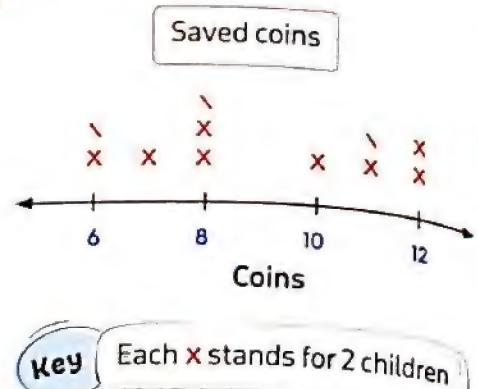
- 1.** Use the line plot,



How many students are in the class in all ?

- A. 14      B. 19  
C. 21      D. 22

- 2.** Use the line plot,



What is the scale for this line plot?

- A. 1      B. 2  
C. 3      D. 4

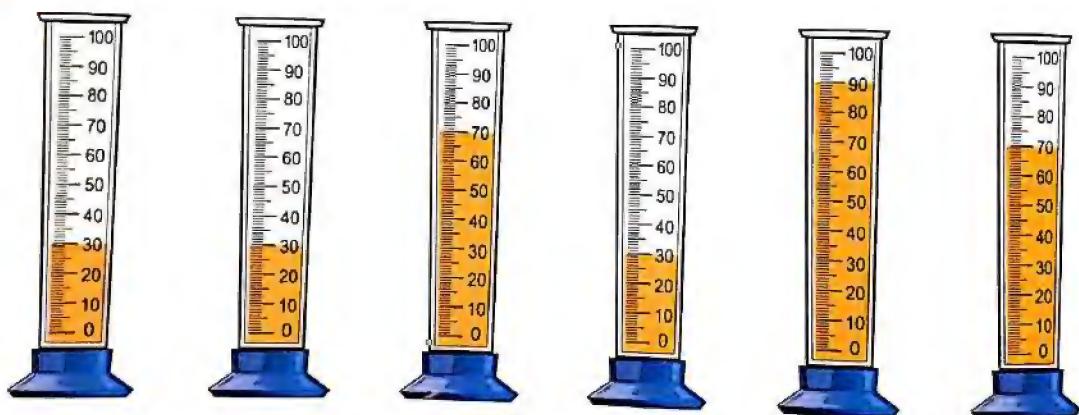
- 3.** A line plot has a scale of 5. The first number on the scale is 15. There are 6 marks on the line plot. What is the last number on the line ?

- A. 10      B. 20  
C. 30      D. 40

- 4.** The key of a line plot indicates that each  $\text{x} = 4$  children. One of the data points on the line has 6  $\text{x}$ 's. How many children does that represent ?

- A. 12      B. 24  
C. 36      D. 48

- 5.** Look at the graduated cylinders,



What scale would you use to represent this data ?

- A. 10      B. 50  
C. 100      D. 200

## Concept 2 Assessment | Unit 3

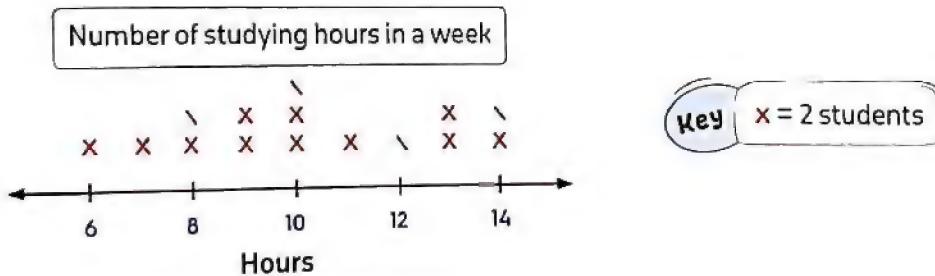


1. put (✓) to the correct answer and (✗) to the incorrect answer.

- a.  $2 \text{ days} = 10 \text{ hours}$  [ ]
- b.  $5 \text{ weeks} = 35 \text{ days}$  [ ]
- c.  $1 \text{ second} = 60 \text{ minutes}$  [ ]
- d.  $100 \text{ minutes} = 1 \text{ hour}, 40 \text{ minutes}$  [ ]
- e.  $5:15 + 2:45 = 8:00$  [ ]
- f.  $7:10 - 30 \text{ minutes} = 6:30$  [ ]

2. Choose the correct answer.

- a.  $2 \text{ minutes} = \underline{\hspace{2cm}}$  seconds.  
A. 30      B. 60      C. 90      D. 120
- b.  $3 \text{ hours} = \underline{\hspace{2cm}}$  minutes.  
A. 30      B. 90      C. 180      D. 300
- c.  $2 \text{ weeks}, 6 \text{ days} = \underline{\hspace{2cm}}$  days.  
A. 8      B. 20      C. 26      D. 30
- d. Use the line plot,



How many students studied 10 hours in a week?

- A. 3      B. 4      C. 5      D. 6
- e.  $5:20 + 45 \text{ minutes} = \underline{\hspace{2cm}}$   
A. 6:05      B. 6:10      C. 6:15      D. 6:55
- f.  $2 \text{ days}, 2 \text{ hours} = \underline{\hspace{2cm}}$  hours  
A. 4      B. 24      C. 48      D. 50

**3.** Complete the following.

Heights of students in a class



Key

$x = 1$

- The scale of the opposite line plot is \_\_\_\_\_.
- $10 \text{ hours} =$  \_\_\_\_\_ minutes.
- The key of a line plot indicates that each  $x = 2$  children. One of the data points on the line has 7  $x$ 's, then it represents \_\_\_\_\_ children.
- $7 \text{ minutes} =$  \_\_\_\_\_ seconds.
- $5:40 - 15 \text{ minutes} =$  \_\_\_\_\_
- The elapsed time from 3:10 A.M. to 7:45 A.M. is \_\_\_\_\_.

**4.** Match the cards that have the same amount.

- 10 days
- 2 minutes
- 4 days, 4 hours
- 17 weeks, 1 day

- 120 seconds
- 120 days
- 240 hours
- 100 hours

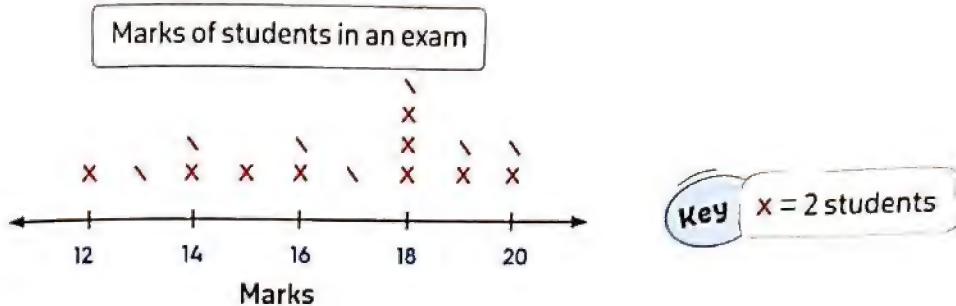
**5.** How many seconds are in 2 hours?

- 6.** Yassin is making bookmarks to sell for charity. Each bookmark takes 6 minutes to make.  
How many bookmarks can he make in one hour?

- 7.** After Wael had been at the park for 45 minutes he noticed that the time was 2:3 P.M.  
At what time did Wael arrive at the park?

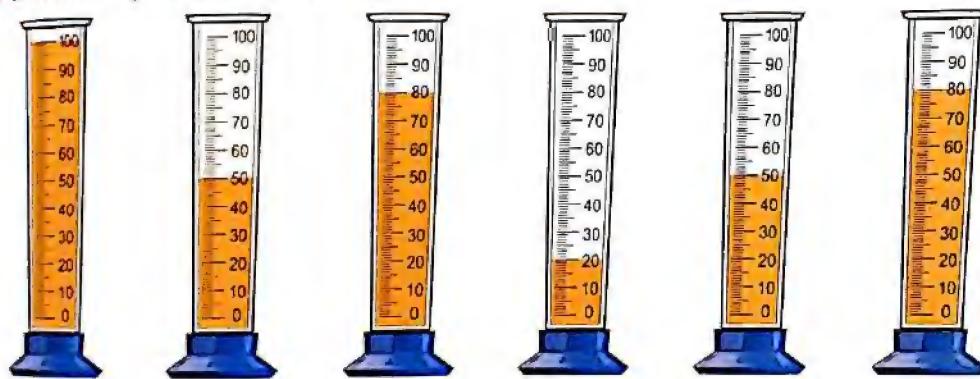
8. As soon as Paula got home from school he worked on his math project for 50 minutes.  
 Then he studied for a test for 30 minutes. He finished at 5 : 45 p.m. At what time did Paula get home from school ?
9. A postman starts his shift at 5 : 30 A.M. and finishes at 8 : 45 A.M. After his break, he starts his again at 9 : 30 A.M. and finishes at 11 : 15 A.M. How long does he actually work for ?
10. If the tour starts at 1 : 45 P.M. and lasts 50 minutes, at what time does the tour end ?

11. Use the line plot to answer the following.



- a. What is the scale for this line plot ?  
 b. How many students got 16 marks ?  
 c. How many students got less than 14 marks ?

12. Look at the graduated cylinders,



- a. What title would you use to represent this data ?  
 b. What scale would you use to represent this data ?

Concept

3

# Measurement All Around



## Fast Fact

Blue whale is the largest animal to have ever lived on Earth, blue whales can grow to over **30 m** long and weight more than **(130,000 kg)** that's longer than three buses and heavier than three lorries !

## Concept Overview

### In concept 3:

Measurement All Around, students apply their understanding of measurement and converting measurement units and apply the four operations to solve a variety of story problems. Multiplication and division are explored in Theme 2 of primary 4, so the numbers used for these operations in this unit are appropriate for students to work with at this time.



Lesson No.	Lesson Name	Vocabulary Terms	Learning Objectives
Lesson 7	3-8 Measuring The World Around Me. Part 1	Review vocabulary as needed.	<ul style="list-style-type: none"><li>Students will add and subtract to solve problems.</li><li>Students will solve story problems involving measurement.</li><li>Students will apply a variety of strategies to solve story problems.</li></ul>
Lesson 8	3-9 Measuring The World Around Me. Part 2	Review vocabulary as needed.	<ul style="list-style-type: none"><li>Students will multiply and divide to solve problems.</li><li>Students will solve story problems involving measurement.</li><li>Students will apply a variety of strategies to solve story problems.</li></ul>

# 3-8 Measuring The World Around Me

## "Part 1 : Use Addition and Subtraction"

### Problem

Ali and Giovanni each caught a fish.

The two fish have

a mass 8,250 g

The mass of Giovanni's fish

is 3 kg, 530 g

What is the mass of Ali's fish ?



#### Understand

- What are you asked to find ?
- What information will you use ?
- Is there any information you will not use ? If so, what ?



#### Plan

- What strategies can you use to solve the problem ?
- Convert measurement units first.
- Use subtraction standard algorithm.



#### Solve

- How can you use the strategy to solve the problem ?

$$\begin{aligned} \text{The mass of Giovanni's fish} &= 3 \text{ kg}, 530 \text{ g} \quad [\text{Think: } 1 \text{ kg} = 1000 \text{ g}] \\ &= 3,530 \text{ g} \end{aligned}$$

$$\begin{aligned} \text{The mass of Ali's fish} &= 8,250 - 3,530 \\ &\stackrel{(7)(12)}{=} \end{aligned}$$

$$= 4,720 \text{ g}$$

$$= 4 \text{ kg}, 720 \text{ g}$$



#### Check

- What other strategy could you use ?

#### Notes for parents :

- In this lesson, your child will use addition and subtraction to solve multistep story problems involving length, mass, capacity, and time.

**Example 1**

Abeer purchased 7 kilograms of sugar, 10 kilograms of flour, 500 grams of cocoa, 275 grams of pecans, and 225 grams of coconut.

What is the total mass of her groceries in kilograms?

**Solution**

$$\begin{aligned}\text{The total mass} &= 7 \text{ kg} + 10 \text{ kg} + 500 \text{ g} + 275 \text{ g} + 225 \text{ g} \\ &= [7 + 10] \text{ kg} + (500 + 275 + 225) \text{ g} \\ &= 17 \text{ kg} + [775 + 225] \text{ g} \\ &= 17 \text{ kg} + 1,000 \text{ g} \\ &= 17 \text{ kg} + 1 \text{ kg} \\ &= 18 \text{ kg}\end{aligned}$$

**Strategies**

- Estimate
- Use smaller numbers
- Draw a picture or model (number line, bar model, diagram, and so on)
- Write an equation with the unknown
- Use the standard algorithm
- Find a hidden question
- Convert measurement units first
- Make a benchmark number

[Associative property]

[Convert measurement units]

**Example 2**

A tailor used 1 m, 35 cm of cloth to make a shirt and 2 m, 15 cm to make trousers.

What is the total length of cloth used by the tailor to make a shirt and trousers?

**Solution**

$$\begin{aligned}\text{The total length} &= 1 \text{ m} + 35 \text{ cm} + 2 \text{ m} + 15 \text{ cm} \\ &= [1 + 2] \text{ m} + [35 + 15] \text{ cm} \\ &\quad [\text{Commutative and associative}] \\ &= 3 \text{ m} + 50 \text{ cm} \\ &\approx 3 \text{ m and } 50 \text{ cm} = 350 \text{ cm}\end{aligned}$$

**Another strategy**

- Convert measurement units first  
 $1 \text{ m}, 35 \text{ cm} = 135 \text{ cm}$   
 $2 \text{ m}, 15 \text{ cm} = 215 \text{ cm}$   
 $\text{The total length} = 135 + 215$
- Use Break up and Bridge strategy  
 $135 = 100 + 30 + 5$   
 $215 = 200 + 10 + 5$   
 $300 + 40 + 10 = 350 \text{ cm}$

Ask your child what strategy he/she decided to use, and why he/she chose it.

**Example 3**

A fish tank with a capacity of 92 liters is filled with 23,000 milliliters of water. How many more liters of water are needed to fill it up completely?

**Solution**

Convert measurement units first.

$$23,000 \text{ mL} = 23 \text{ L} \quad [\text{Think: } 1,000 \text{ mL} = 1 \text{ L}]$$

Number of liters needed to fill up the tank

$$\begin{array}{r} (8 \cdot 12) \\ = 92 \text{ L} - 23 \text{ L} \\ = 69 \text{ L} \end{array}$$

(Standard subtraction algorithm)

Another way to subtract 92 - 23

Add to subtract strategy

$$23 + 7 = 30$$

$$30 + 60 = 90$$

$$90 + 2 = 92$$

$$\text{So, } 7 + 60 + 2 = 69$$

$$\text{Then } 92 - 23 = 69$$

**Example 4**

Ahmed studied from 3 : 15 – 4 : 45. His sister, Sarah studied from 4 : 30 – 6 : 15

Who studied longer and by how much?

**Solution**

Ahmed

hr.	min.
4	45
- 3	15
1	30

The time of Ahmed = 1 hr. and 30 min.

$$= 60 + 30 = 90 \text{ min.}$$

Sarah

hr.	min.
5	6
- 4	30
1	45

The time of Sarah = 1 hr. and 45 min.

$$= 60 + 45 = 105 \text{ min.}$$

So, Sarah studied longer than Ahmed and the difference =  $105 - 90 = 15 \text{ min.}$

**Check your understanding**

1. Two wooden planks of lengths 12 m, 60 cm and 18 m, 63 cm are glued together to make a long wooden bridge. What is the total length of the bridge?

2. Ashraf purchased 7 kg, 200 g of sugar, 9 kg, 395 g of rice. What is the total weight which Ashraf purchased?

**Notes for parents :**

- Ask your child to use different strategies to solve the problems.

# Exercise 19

## Measuring The World Around Me "Part 1 : Use Addition and Subtraction"

REMEMBER

UNDERSTAND

APPLY

PROBLEM SOLVING

From the school book

Solve as many problems as you can. Use at least three different problem-solving strategies.

### First : Problems involving length

1. Samia had 54 m, 20 cm of ribbon to make flowers. 29 m, 39 cm was left unused.  
How much ribbon was used to make flowers ?

\_\_\_\_\_

2. One box is 44 cm, 5 mm tall. Another box is 35 cm. tall. How tall will the boxes be if both are stocked one on top of the other ?

\_\_\_\_\_

3. Sameh has 63 m of ribbon. If he cuts 56 m, 21 cm ribbon from it, what length of ribbon will be left ?

\_\_\_\_\_

4. Rania is measuring two ant lines. Colony A's ant line is 30 centimeters long, and Colony B's ant line is 500 millimeters long. How many centimeters long are the two ant lines together ?

\_\_\_\_\_

5. An ant from Colony A walked 2 kilometers in a day. An ant from Colony B walked 3,000 meters in a day. Which ant walked the farthest and how much farther in kilometers did it walk ?

\_\_\_\_\_

### Strategies

- Estimate
- Use smaller numbers
- Draw a picture or model [number line, bar model, diagram, and so on]
- Write an equation with the unknown
- Use the standard algorithm
- Find a hidden question
- Convert measurement units first
- Make a benchmark number

6. Taher grew 10 centimeters in 1 year. He is now 1 meter, 6 centimeters tall. How many centimeters tall was Taher 1 year ago?

### Second : Problems involving mass

7. Zeina purchased 8 kilograms of sugar, 10 kilograms of flour, 500 grams of cocoa, 225 grams of pecans, and 275 grams of coconut. What is the total mass of her groceries in kilograms?
8. The total weight of Tania's bag is 45 kg, 750 g and Diana's bag is 43 kg, 950 g. Whose bag is heavier and by how much?
9. In Colony A, the ants collect 950 grams of food. If they consume 25 grams of food on Monday and 37 grams of food on Tuesday, how many grams of food are left?
10. Dalia's dog weighs 15 kilograms. When she took it to the vet, she learned that her dog gained 2,000 grams. How many more grams will Dalia's dog need to gain before it weighs 20 kilograms?
11. The potatoes Aya bought weight 2 kilograms, 920 grams. Her onions weighed 1,075 grams less than the potatoes. How much did the potatoes and onions weight together?

- 12.** A worker transferred 10 bags of rice weighing 45 kg each into a truck. The weight of the empty truck is 1,480 kg. What will be the weight of the truck with the bags?

- 13.** Ali's cat weighs 7 kilograms and his dog weighs 17 kilograms. When Ali took them to the vet, he learned that his cat gained 450 grams and his dog gained 120 grams. How much do his two pets weigh in all now?

### Third : Problems involving capacity

- 14.** A fish tank with a capacity of 100 liters is filled with 20,000 milliliters or water. How many more liters of water are needed to fill it up completely?

- 15.** Sara bought 500 mL of mustard oil, 250 mL of coconut oil and 2 L of refined oil. What is the total quantity of the 3 oils together?

- 16.** A milkman sold 46 L, 200 mL of milk on 3 days of a week and 53 L, 195 mL of milk in the next 2 days. What quantity of milk did he sell in the 5 days?

- 17.** Mr. Emad bought four 2-liter bottles of soda for the Primary 4 picnic. If there were 2 liters and 829 milliliters of soda remaining at the end of the picnic, how many milliliters of soda did the students drink?

- 18.** Mrs. Basma bought 2 cartons of milk which are 2 liters each. Her three children finished 1,200 milliliters on Monday and 950 milliliters on Tuesday. How many milliliters of milk are left?

**Fourth** : Problems involving time

- 19.** A bus leaves for Cairo at 4 : 30 P.M. It takes 1 hr, 25 min. to reach there. At what time will it reach at Cairo ?
- 
- 20.** The duration of a film show is 3 hr, 15 min. It starts at 6 : 30 P.M. When will it end ?
- 
- 21.** Rex visited a fashion show. He stayed there for 2 hr, 30 min and came back at home. If he reached the fashion show at 8 : 45 P.M., when did he leave for his home ?
- 
- 22.** A pharaoh ant grows from egg to adult in 45 days. A carpenter ant grows from egg to adult in 12 weeks. Which species takes longer to grow from egg to adult ? How much longer ?
- 
- 23.** Worker ants take power naps totaling up to 250 minutes a day. A queen ant may sleep up to 9 hours a day. Which ant sleeps longer and by how many minutes ?
- 
- 24.** Ziad played his video game from 3 : 45 P.M. until 5 : 10 P.M. He is only allowed to play video games for 80 minutes. Has he broken the rule ? If no, why not ? If yes, by how many minutes ?


**Challenge**

- 25.** Amal has a rope of length 40 m. She gave 12 m, 53 cm to Amgad, 18 m, 35 cm to Bassem and 9 m, 7 cm to Ayman. What length of rope is still left with Amal ?

# Multiple Choice Questions

Choose the correct answer.

- |  |  |
|--|--|
| <p><b>1.</b> Mr. Martin's spanish class is 45 minutes long. If it starts at 3:30, then it ends at _____.</p> <p>A. 4:30      B. 4:15<br/>C. 4:00      D. 4:45</p>  | <p><b>2.</b> Esslam measured a line for his art project. If it is 200 millimeters long , then the length of this line in centimeters is _____.</p> <p>A. 200      B. 2<br/>C. 20      D. 2,000</p>   |
| <p><b>3.</b> If Sameh bought a rope of length 5,730 cm, then the length of the rope is _____ m and _____ cm.</p> <p>A. 5 ,730      B. 573 ,0<br/>C. 53 ,70      D. 57 ,30</p>  | <p><b>4.</b> Hany ran 1,800 meters on Saturday and 3 km ,200 m on Sunday. How many meters did be run in all ?</p> <p>A. 5      B. 1,400<br/>C. 4,000      D. 5,000</p>   |
| <p><b>5.</b> A box contains 2 bags of sugar. If the mass of each one is 1 kg and 300 g , what is the total mass in grams ?</p> <p>A. 600      B. 2,600<br/>C. 2,800      D. 1,300</p>  | <p><b>6.</b> If Vector studied from 4:10 to 5:00 , then he studied _____ minutes.</p> <p>A. 60      B. 110<br/>C. 40      D. 50</p>  |
| <p><b>7.</b> Peter is over weight. He is 105 kg. If his aim is to loss 500 g per week. then Peter's weight after 2 weeks is _____ kg.</p> <p>A. 104      B. 105<br/>C. 106      D. 107</p>   | <p><b>8.</b> Mr. Bassem bought 3 cartons of juice which are 2 litres each. If his three children finished 4,700 milliliters , then the left of juice is _____ mL</p> <p>A. 2,300      B. 2,700<br/>C. 300      D. 1,300</p>                            |
| <p><b>9.</b> Bassem bought 3 meters of rope. He then cut off 170 centimeters of rope to glue around the edge of a pot. How many centimeters of rope does Bassem have left ? _____</p> <p>A. 173      B. 470<br/>C. 130      D. 167</p> | <p><b>10.</b> Shaimaa poured 5 L of water into a beaker. During an experiment, she added 200 mL of water. How much water was in the beaker at the end of the experiment ? _____</p> <p>A. 205 mL      B. 2,500 mL<br/>C. 4,800 mL      D. 5,200 mL</p> |

## 3-9 Measuring The World Around Me

### "Part 2 : Multiplying and Division"



#### Problem

A cow gives 22 L and 500 mL of milk daily.  
 If the milkman has 10 cows, how much milk does he  
 get in liters in a day ?  
 And if the daily milk is filled in bottles of capacity  
 1,000 mL, how many bottles will be required ?  
 Can you help the milkman ?!



#### Understand

- What are you asked to find ?
- What information will you use ?
- Is there any information you will not use if so, what ?



#### Plan

- What strategies can you use solve the problem ?
- Convert measurement units first.
- Use division and multiplying algorithm.



#### Solve

- How can you use the strategies to solve the problem ?  
 $22 \text{ L}, 500 \text{ mL} = 22,500 \text{ mL}$
- The milk from 10 cows in mL =  $22,500 \times 10 = 225,000 \text{ mL}$   
 The milk from 10 cows in L =  $225,000 \div 1,000 = 225 \text{ L}$
- The capacity of one bottle is 1,000 mL = 1 L  
 Then the milkman needs 225 bottles.



#### Check

- What other strategy could you use ?

#### Notes for parents :

- In this lesson, your child use multiplying and division to solve multistep story problems involving length, mass, capacity, and time.

**Example 1**

Wael has a 20 meter-long piece of wood. He wants to cut it into 4 equal lengths. How long should each cut piece be in meters?

How long will each of these pieces be in centimeters?

**Solution**

The length of each piece in meters =  $20 \div 4 = 5$  m [Think :  $4 \times 5 = 20$ ]

The length of each piece in centimeters =  $5 \times 100 = 500$  cm [Think :  $1\text{m} = 100\text{cm}$ ]

**Example 2**

A box can carry a total mass of 10 kg. Laptops have to be packed inside the box.

If the mass of each laptop is 2,000 g, how many laptops can be packed inside the box?

**Solution**

The mass of each laptop = 2,000 g = 2 kg. [Think :  $1,000\text{g} = 1\text{kg}$ ]

The number of laptops can be packed inside the box =  $10 \div 2 = 5$  laptops

**Example 3**

Mona is stringing beads to make a necklace. She is using 30 of the 8 mm beads, 70 of the 4 mm beads, and 40 of the 2 mm beads.

How long will her finished necklace be in cm?

**Solution**

$$30 \text{ of } 8 \text{ mm} = 30 \times 8 = 240 \text{ mm}$$

$$70 \text{ of } 4 \text{ mm} = 70 \times 4 = 280 \text{ mm}$$

$$\text{and } 40 \text{ of } 2 \text{ mm} = 40 \times 2 = 80 \text{ mm}$$

$$\begin{aligned}\text{So, the length of her finished necklace} &= 240 + 280 + 80 = 600 \text{ mm} \\ &= 600 \div 10 \\ &= 60 \text{ cm}\end{aligned}$$

Tell your child that multistep problem needs to know what information do you have to help you solve the problem.

**Example 4**

Salwa is a runner. She spends half an hour every day running.

How many minutes in total does she run for during a 9-day period ?

**Solution** 

What she runs each day = Half an hour = 30 min.

What she runs for during a 9-day period =  $30 \times 9 = 270$  min.

**Check your understanding**

In a relay race, 4 people ran 3,000 meters each. In a distance race, John ran 15 kilometers. Who ran farther, the whole relay team or John ?

How much farther ?

**Notes for parents :**

- Help your child to read and understand to figure out the problem and use the information to decide which operation to use.

## Exercise 20

REMEMBER

KNOWLEDGE

SKILL

PROBLEM SOLVING

From the school book

Solve as many problems as you can.

First : Problems involving length

1. Ahmed has a 12 meter-long piece of wood. He wants to cut it into 3 equal lengths.  
How long should each cut piece be in meters ? How long will each of these pieces be in centimeters ?

2. Ants walk about 5,000 meters each day. How many kilometers do ants walk in 6 days ?

3. An ant may walk up to 5 km per day. If the ant continues this for 20 days, how many meters will the ant walk ?

4. Sara travelled 9 days continuously. She travelled 5,000 meters each day.  
How many kilometers did she walk in all ?

5. A wall has a height of 4 m 20 cm. If each brick is 10 cm high, how many bricks were used to attain the given height of the wall.

6. Eman is building a wind chime. She needs string in the following lengths : six pieces of 20 cm, 3 pieces of 30 cm and one piece of 40 cm. How much string does she need ?

**Second : Problems involving mass**

7. Ehab is a weightlifter. He has a mass of 100 kilograms. His aim is to gain 500 grams per week. If he does that for 5 weeks, what will his mass be at the end ?

- 
8. Mr. Edward bought 200 grams of candy for each of his 10 grandchildren.  
How many total kilograms of candy did he buy ?
- 
- 

- 
9. A colony of ants eats approximately 2,000 grams of food each day. If the ants have 10 kilograms of food stored, how many days will the food last ?
- 
- 

- 
10. Mariam was having a picnic with her family and counted 10 ants walking by. If each ant weighed 1 gram and carried 50 times its body weight, how much weight was being carried in all ?
- 
- 

**Third : Problems involving capacity**

- 
11. A water purifier cleans 10 L , 50 mL of water each day. How much water will be cleaned by the cleaner in 10 days ?
- 
- 

- 
12. Ayman is a runner. While Ayman is in training, he needs to drink 500 milliliters of water 4 times per day. How many liters of water will that be for 1 week ?
- 
-

13. Mostafa has 32 liter bottles of soda. If he divides the soda equally between himself and his 7 friends, how much soda will each person have ?

14. John has a jar filled with juice. After he poured 400 mL of juice in 7 glasses equally. He was still left with 200 mL juice in the jar. What was the capacity of jar in liters ?

#### Fourth : Problems involving time

15. Samira is studying for an upcoming math test. If she studies for 30 minutes a day, how many hours will she have spent studying in 8 days ?

16. Amany is a swimmer. She spends half an hour every day swimming. How many minutes in total does she swim for during a 5-day period ?

#### Challenge

17. Usama has 11 L of liquid soap and wants to fill it in 20 cans of capacity 500 mL each.

- a. Will he be able to fill all the cans completely ?
- b. How much quantity of liquid soap will be left out ?

18. An ant is at the bottom of a 20-meter deep well and is trying to get to the top. Each day it climbs 4 meters up, but each night it slides back 2 meters. How many days does it take for it to get out of the well ?



## Multiple Choice Questions

Choose the correct answer.

- |  |  |
|--|--|
| <p><b>1.</b> Sami has 25 meter-long piece of cloth.<br/>If he wants to cut it into 5 equal pieces,<br/>the length of each one equal<br/><b>(Choose two answers)</b></p> <p>A. 4 m      B. 5 m<br/>C. 500 cm      D. 400 cm</p>   | <p><b>2.</b> If Mina travelled 10 days continuously,<br/>He travelled 4,000 meters each<br/>day, then he walk in all about<br/>kilometers.</p> <p>A. 4      B. 40<br/>C. 400      D. 4,000</p>       |
| <p><b>3.</b> If Mohamed rides his cycle 10 km per day,<br/>then he covers _____ in 5 days.</p> <p>A. 2 km      B. 5 km<br/>C. 5,000 m      D. 50 km</p>  | <p><b>4.</b> If the total weight of 10 balls having<br/>same weight is 130,000 grams, then the<br/>weight of each ball is _____ kg.</p> <p>A. 130      B. 1300<br/>C. 13      D. 13,000</p>          |
| <p><b>5.</b> If ants walk about 3,000 meters each<br/>day, then the ants walk _____ km<br/>in 5 days.</p> <p>A. 3      B. 150<br/>C. 15,000      D. 15</p>   | <p><b>6.</b> An ant walk up to 2 km per day. If the ant<br/>continues this for 10 days, then the ant<br/>will walk about _____ meters.</p> <p>A. 200      B. 2,000<br/>C. 20,000      D. 200,000</p> |
| <p><b>7.</b> Thabit has a piece of rope that is 750 centimeters long. He needs to be able to cut this into 6 pieces of rope that are each 110 centimeters long. Is Thabit's rope long enough ?</p> <p>A. No, because <math>750 \times 6 = 4,500</math> , <math>4,500 &gt; 750</math><br/>B. Yes, because <math>110 \times 6 = 660</math> , <math>660 &lt; 750</math><br/>C. No, because <math>750 \div 6 = 125</math> , <math>125 &gt; 110</math><br/>D. Yes, because <math>750 - 110 - 6 = 634</math> , <math>634 &lt; 750</math></p> |  |

## Concept 3 Assessment | Unit 3



1. Put (✓) to the correct answer and (✗) to the incorrect answer.

- a. If there is 47 liter and 360 milliliters of water in the tank , 39 liter and 125 milliliters of water is consumed, then the left in the tank is 8 liter and 235 milliliters. ( )
- b. If Sarah purchased 2 kg of sugar, 5 kg of flour, 500 g of cocoa, 225 g of pecans, and 275 g of coconut, then the weight of all is 7 kg. ( )
- c. If Mr. Ahmed bought a cloth of length 30 m and 80 cm, then its length equal 3,080 cm. ( )
- d. Amany has 18 m long piece of wood. If she cut it into 9 equal pieces, then the length of each one equals 200 cm. ( )
- e. An ant walk up to 10 km per day. If the ant continues this for 20 days, then the ant will walk 200 m. ( )
- f. The duration of a film show is 3 hr. If it starts at 6 : 30 P.M., then it will end at 9 : 30 P.M. ( )

2. Choose the correct answer.

- a. Jana has 36 m of ribbon. If she cuts 25 m , 75 cm ribbon from it, then the length of ribbon will be \_\_\_\_\_  
A. 11 m , 25 cm      B. 11 m , 75 cm      C. 10 m , 25 cm      D. 71 m , 75 cm
- b. If Reham purchased 5 kg , 200 g of sugar and 3 kg , 395 g of rice, then the total mass which Reham carried equal \_\_\_\_\_  
A. 8 kg , 595 g      B. 5 kg , 395 g      C. 8 kg , 955 g      D. 2 kg , 195 g
- c. Mr. Amgad's class is 45 minutes long. If it starts at 2 : 15 P.M. , then it ends at \_\_\_\_\_ P.M.  
A. 3 : 45      B. 2 : 00      C. 2 : 45      D. 3 : 00
- d. Hany bought 3 cartons of milk which are 2 liters each. If his two children drunk 3,300 milliliters, then the left of the milk is \_\_\_\_\_ milliliters.  
A. 9,300      B. 3,300      C. 2,700      D. 2,000
- e. If the ant walk about 5,000 meters each day, then the ant walk \_\_\_\_\_ km in a week.  
A. 5,000      B. 35      C. 35,000      D. 5
- f. If a water purifier cleans 7 L , 50 mL of water each day, then the water will be cleaned by the cleaner in 10 days equal \_\_\_\_\_  
A. 7,500 mL      B. 70,500 mL      C. 7,050 mL      D. 750 mL

3. Complete.

- a. Samira is studying math. If she studies for 30 minutes a day, then the minutes will she have spent studying in 10 days is min.
- b. Wael travelled 5 days continuously. If he travelled 3,000 meters each day, then he walk in all about kilometers.
- c. If Mr. Edward bought 100 grams of candy for each of his 20 friends, then the total kilograms of candy he bought is
- d. Ayman grew 10 cm in 1 year. If he is now 1 m , 60 cm tall, then his tall after 2 years will be cm.
- e. If two wooden planks of length 11 m , 20 cm and 18 m , 80 cm are glued together to make along wooden bridge, then the total length of bridge is m.
- f. If a bus leaves for Alex. at 4 : 30 P.M. it takes 1 hr. , 25 min. to reach there , then the time will it reach at Alex is : P.M.

4. The potatoes Aya bought weighed 2 kilograms 920 grams, and onions weighed 1,075 grams. How much did the potatoes and onions weigh together ?

5. Ehab is a weightlifter. He has a mass of 100 kilograms. His aim is to gain 500 grams per week. If he does that for 10 weeks, what will his mass be at the end ?

6. Worker ants take power naps totaling up to 250 minutes a day. A queen ant may sleep up to 9 hours a day. Which ant sleeps shorter and by how many minutes ?

7. Amany is a swimmer. She spends half an hour every day swimming. How many minutes in total does she swim for during a 6-day period ?

8. An ant from Colony A walked 2 kilometers in a day. An ant from colony B walked 3,000 meters in a day. Which ant walked the closer and how much closer in kilometers did it walk ?

9. Sara traveled 9 days continuously. She traveled 3,000 meters each day. How many kilometers did she walk in all ?

10. A fish tank with a capacity of 10 liters is filled with 2,000 milliliters of water. How many more liters of water are needed to fill it up completely ?

11. Ayman is a runner. While Ayman is in training, he needs to drink 500 milliliters of water 2 times per day. How many liters of water will that be for 1 week ?

## Unit Three Assessment



1. Put (✓) to the correct answer and (✗) to the incorrect one.

- |   |          |  |          |
|---|----------|--|----------|
| a. $1\text{ km} = 100\text{ m}$                       | [      ] | b. $3\text{ dm} = 30\text{ cm}$              | [      ] |
| c. $2\text{ days}, 10\text{ hours} = 12\text{ hours}$ | [      ] | d. $505\text{ cm} = 5\text{ m}, 5\text{ cm}$ | [      ] |
| e. $4\text{ weeks} = 28\text{ days}$                  | [      ] | f. $60\text{ seconds} = 1\text{ hour}$       | [      ] |

2. Choose the correct answer.

- |   |                 |                 |                 |                 |
|---|-----------------|-----------------|-----------------|-----------------|
| a. $5\text{ kg} = 5,000$  | A. hg           | B. day          | C. g            | D. dg           |
| b. $9\text{ m} - 80\text{ cm} =$  | cm              |                 |                 |                 |
| A. 1  | B. 10           | C. 100          | D. 820          |                 |
| c. $L = 17,000\text{ mL}$   | A. 17           | B. 170          | C. 1,700        | D. 170,000      |
| d. A line plot has a scale of 4. The first number on the scale is 8. There are 6 marks on the line plot. What is the last number on the line? | A. 16           | B. 20           | C. 24           | D. 28           |
| e. The elapsed time from 3:50 A.M. to 7:00 A.M. is _____  | A. 3 hr, 50 min | B. 3 hr, 10 min | C. 4 hr, 10 min | D. 4 hr, 50 min |
| f. $17\text{ kg } \square 7,000\text{ g}$   | A. >            | B. =            | C. <            | D. otherwise    |

3. Complete each of the following.

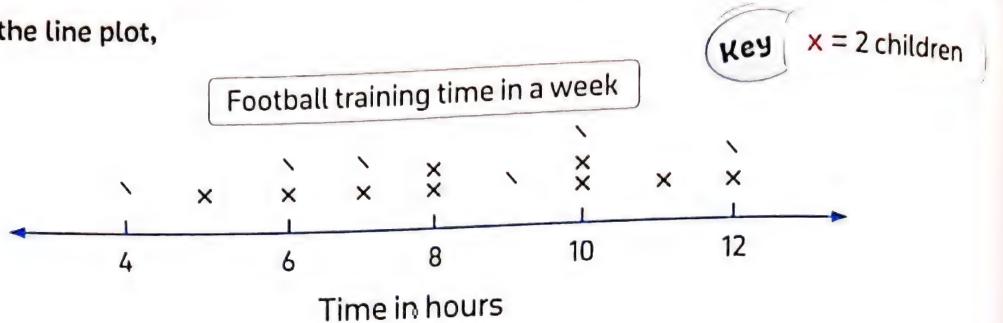
- |  |                                       |
|--|---------------------------------------|
| a. $8\text{ kg}, 37\text{ g} =$ _____ g  | b. $6:34 - 1:25 =$ _____              |
| c. 1 week, 3 days = _____ hours  | d. $8:25 + 35\text{ minutes} =$ _____ |
| e. $897\text{ mm} =$ _____ cm, _____ mm  |                                       |
| f. The key of a line plot indicates that each X = 2 children. One of the data points on the line has 5 X's, then it represents _____ children. |                                       |

4. Match the card which have the same amount.

- |  |   |  |  |
|--|---|--|--|
| a. <span style="border: 1px solid black; padding: 2px;">4 kg</span>    | b. <span style="border: 1px solid black; padding: 2px;">4 km</span>   | c. <span style="border: 1px solid black; padding: 2px;">4 dm</span>  | d. <span style="border: 1px solid black; padding: 2px;">4 cm</span>    |
| 1. <span style="border: 1px solid black; padding: 2px;">4,000 m</span> | 2. <span style="border: 1px solid black; padding: 2px;">400 mm</span> | 3. <span style="border: 1px solid black; padding: 2px;">40 mm</span> | 4. <span style="border: 1px solid black; padding: 2px;">4,000 g</span> |

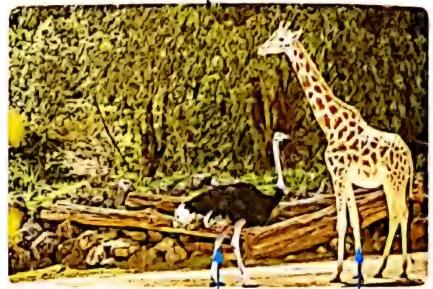
5. List 3 dm, 120 cm, 18 dm, 1 m from greatest to least.
6. Sarah purchased 3 kg, 400 g of sugar and 5 kg, 217 g of rice. What is the total mass which Sarah carried?
7. Hany spent 2 hours, 45 minutes visiting the Zoo. He arrived at 8 : 30 A.M.  
What time did he leave?
8. 10 books of height 8 cm, 5 mm each are stacked over one another. What is the total height so obtained?

9. Look at the line plot,



- a. What is the scale for this number line?  
b. What is the number of children trained 7 hours in a week?

10. A giraffe can be 5 meters, 50 centimeters tall.  
An ostrich can be 2 meters, 40 centimeters tall.  
How much taller is the giraffe than the ostrich in centimeters?



The tallest bird is the ostrich  
The tallest mammal is the giraffe

11. A train leaves for Alexandria at 2 : 30 P.M. It takes 1 hour, 25 minutes to reach Banha.  
At what time will it reach at Banha.

12. A fizzy can of mass 300 g, Jana bought 6 cans.  
What is the total mass of cans in kilograms and grams?

# UNIT 4

## Area and Perimeter

» Concept 1 : Explore Area and Perimeter



### Fast Fact

Egypt is located mostly in the northeast corner of the African continent. It has a total area close to **1 million square kilometer**. El-Wadi El-Gidid, also known as New Valley governorate, is the largest among the 27 existing governorates with an area close to **440,000 square kilometers**.

## Concept

# 1

# Explore Area and Perimeter



## Fast Fact

The Great Pyramid of Giza (also known as the pyramid of Khufu) is the largest of the three pyramids. Its base is just like a square, the length of each side at the base averaging 230 meters.

What is its perimeter ?!



## Concept Overview

### In concept 1:

Explore Area and Perimeter, students investigate the two-dimensional measurement properties of length, width, perimeter, and area. Students learn and understand the importance of area and perimeter in real-life situations. Students calculate the area of rectangles, use formulas to calculate unknowns when given some dimensions of rectangles, and know how to find the perimeter of any shape. In Theme 2, students delve into multiplication and division. This final unit of Theme 1 is a launch into that study with a conceptual and real-life application.

Lesson No.	Lesson Name	Vocabulary Terms	Learning Objectives
Lesson 1	4-1 Marching Ants [Use Formula to Find Perimeter]	Formula - Length - Perimeter - Quadrilateral - Scale - Sum - Width	<ul style="list-style-type: none"><li>Students will define perimeter.</li><li>Students will use formulas to calculate the perimeter of rectangles.</li><li>Students will explain how to calculate perimeter.</li></ul>
Lesson 2	4-2 Fill the space [Use Formula to Find Area]	Area - Length - Two-Dimensional - Width	<ul style="list-style-type: none"><li>Students will define area.</li><li>Students will use formulas to calculate the area of rectangles.</li><li>Students will explain how to calculate area.</li></ul>
Lesson 3	4-3 Something is Missing !	Area - Dimensions - Formula - Perimeter - Unknown	<ul style="list-style-type: none"><li>Students will use formulas to calculate unknowns when given some dimensions of rectangles.</li></ul>
Lesson 4	4-4 Odd Shapes	Area - Complex - Perimeter	<ul style="list-style-type: none"><li>Students will calculate the area and perimeter of complex shapes.</li><li>Students will explain their strategies for finding the area and perimeter of complex shapes.</li></ul>
Lesson 5	5-5 Growing Dimensions	Array - Multiplicative Comparison - Square Units	<ul style="list-style-type: none"><li>Students use area and perimeter formulas to solve multiplicative comparison problems.</li></ul>

## 4-1 Marching Ants "Use Formula to Find Perimeter"

## Learn

## Using formula to find the perimeter of a rectangle

## Problem

Omar is a farmer. His rectangular farm is 60 m long and 40 m wide.

He wants to install a fence all around his farm.

**What is the length of the fence?**



You can use a formula to find the perimeter of a rectangle. Where "P" stands for perimeter, "l" for length and "w" for width.



 Remember  
Perimeter is the distance  
around the figure

Shape	Perimeter	Formula
 $\begin{array}{c} l \\   \\ w \quad \quad w \\   \\ l \end{array}$	$\text{Perimeter} = \text{length} + \text{width} + \text{length} + \text{width}$ or $\text{Perimeter} = 2 \times \text{length} + 2 \times \text{width}$ or $\text{Perimeter} = 2 \times [\text{length} + \text{width}]$	$P = l + w + l + w$ or $P = [2 \times l] + [2 \times w]$ or $P = 2 \times (l + w)$

$$\text{So, the length of the fence} = \underline{\underline{60 + 40 + 60 + 40}} \quad [\text{Think: } P = l + w + l + w] \\ = 100 + 100 = 200 \text{ m}$$

$$\text{Or the length of the fence} = [2 \times 60] + [2 \times 40] \quad [\text{Think: } P = [2 \times l] + [2 \times w]] \\ = 120 + 80 = 200 \text{ m}$$

Or the length of the fence =  $2 \times [60 + 40]$  [Think :  $P = [2 \times (l+w)]$ ]  
 $= 2 \times 100 = 200 \text{ m}$

### **Notes for parents :**

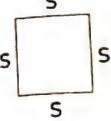
- Make sure your child understand that a formula is a kind of rule that tells how to solve a problem.

**Learn****Using formula to find the perimeter of a square**

All squares are rectangles. Square has 4 equal sides.

You can use a formula to find the perimeter of a square.

Where "P" stands for perimeter and "s" stands for side length.

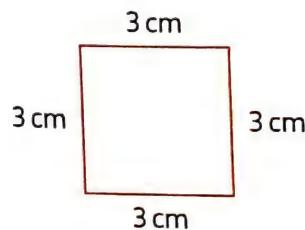
Square	Perimeter	Formula
	$\text{Perimeter} = \text{side} + \text{side} + \text{side} + \text{side}$ or $\text{Perimeter} = 4 \times \text{side}$	$P = s + s + s + s$ or $P = 4 \times s$

For example :

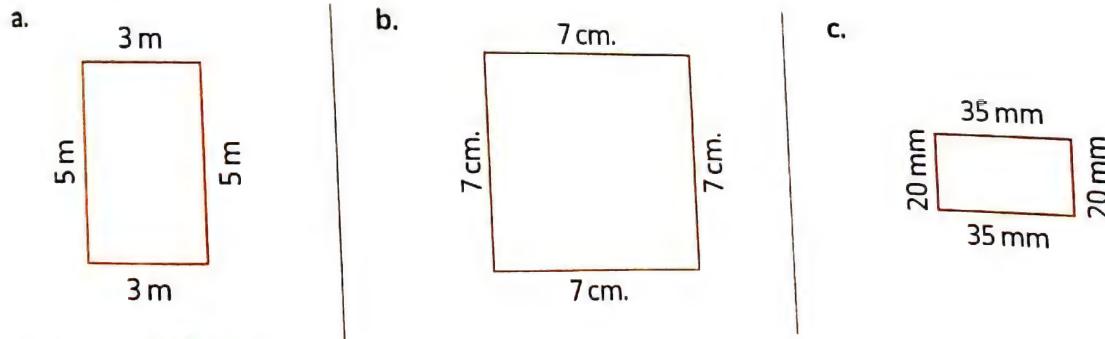
To find the perimeter of the opposite square use the formula

$$P = 4 \times s \\ = 4 \times 3 = 12 \text{ cm}$$

$$\text{or} \\ P = s + s + s + s \\ = 3 + 3 + 3 + 3 = 12 \text{ cm}$$

**Example 1**

Calculate the perimeters of the following shapes. Use different formulas to solve each problem.

**Solution** 

a. • First formula :  $P = [2 \times l] + [2 \times w] = [2 \times 5] + [2 \times 3] = 10 + 6 = 16 \text{ m}$

• Second formula :  $P = 2 \times [l + w] = 2 \times [5 + 3] = 2 \times 8 = 16 \text{ m}$

b. • First formula :  $P = s + s + s + s = 7 + 7 + 7 + 7 = 28 \text{ cm}$

• Second formula :  $P = 4 \times s = 4 \times 7 = 28 \text{ cm}$

• Remind your child to take careful note of the measurement unit used in each problem.

• Remind your child to take careful note of the measurement unit used in each problem.

c. • First formula :  $P = l + w + l + w = 35 + 20 + 35 + 20$

$$= \underset{55}{\downarrow} + \underset{55}{\downarrow} = 110 \text{ mm}$$

• Second formula :  $P = 2 \times (l + w) = 2 \times (20 + 35) = 2 \times 55 = 2 \times (50 + 5)$

$$= 100 + 10 = 110 \text{ mm}$$

 Remember  
You can use  
distributive property  
to multiply

## Example 2

Ahmed wants to make a rectangular carpet of perimeter 12 m.

Draw different rectangles that could represent his carpet.



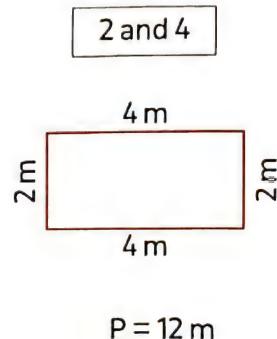
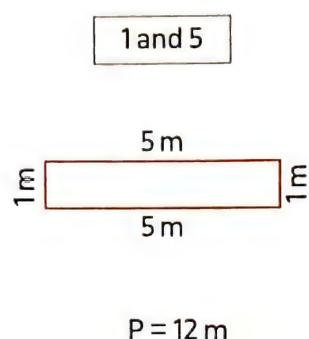
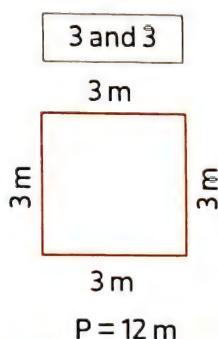
### Solution

To find different rectangles of perimeter 12 m, do as follow :

- Find half of perimeter [half of perimeter =  $l + w$ ]

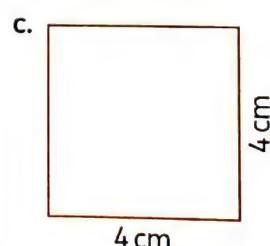
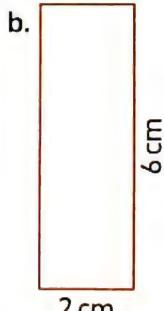
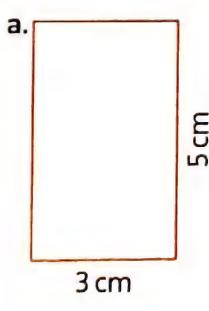
$$l + w = 12 \div 2 = 6 \text{ m}$$

- Find two numbers their sum is 6 , these two numbers are length and width of the required rectangle

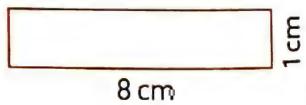


### Check your understanding

Which of the figures below have the same perimeter ?



d.



### Notes for parents :

- Review the distributive property using numbers rather than measurements.

# Exercise 21

## 4-1 Marching Ants "Use Formula to Find Perimeter"

REMEMBER

HERITAGE

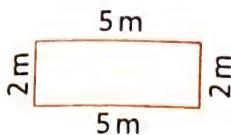
ART

PROBLEM SOLVING

From the school book

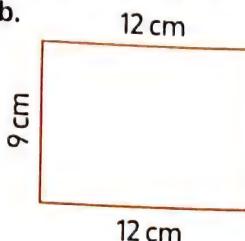
1. Use the formula  $P = l + w + l + w$  to calculate the perimeters of the following rectangles.

a.



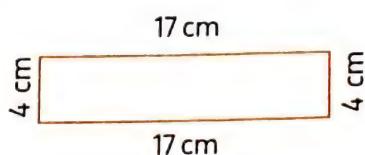
$$P =$$

b.



$$P =$$

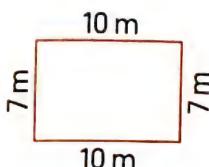
c.



$$P =$$

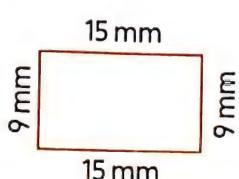
2. Use the formula  $P = (2 \times l) + (2 \times w)$  to calculate the perimeter of each of the following rectangles.

a.



$$P =$$

b.



$$P =$$

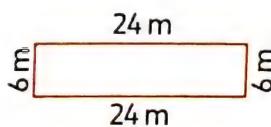
c.



$$P =$$

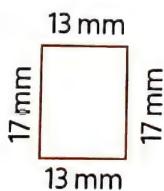
3. Use the formula  $P = 2 \times (l + w)$  to calculate the perimeter of each of the following rectangles.

a.



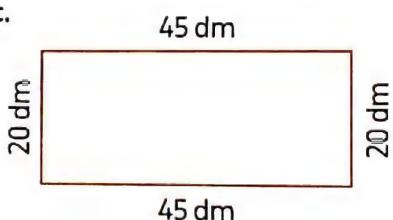
$$P =$$

b.



$$P =$$

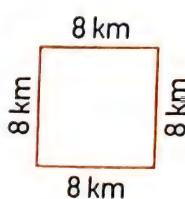
c.



$$P =$$

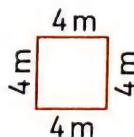
4. Use the formula  $P = 4 \times s$  to calculate the perimeter of each of the following squares.

a.



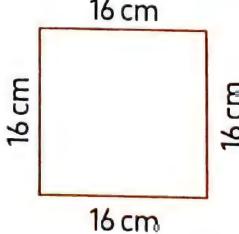
$$P =$$

b.



$$P =$$

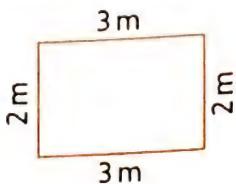
c.



$$P =$$

5. Calculate the perimeter of the shapes that follow. Use two different formulas to solve each problem. Show your work.

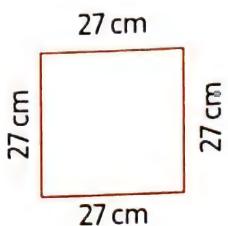
a.



• First formula: \_\_\_\_\_

• Second formula: \_\_\_\_\_

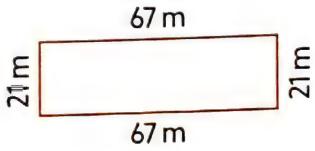
c.



• First formula: \_\_\_\_\_

• Second formula: \_\_\_\_\_

e.

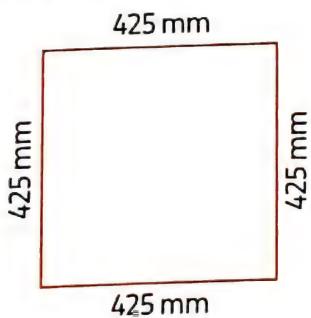


• First formula: \_\_\_\_\_

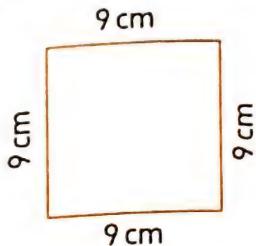
• Second formula: \_\_\_\_\_

6. Find the perimeter. Show your work.

a.



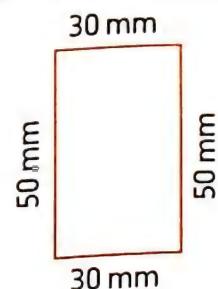
b.



• First formula: \_\_\_\_\_

• Second formula: \_\_\_\_\_

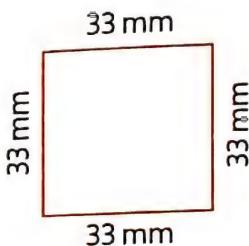
d.



• First formula: \_\_\_\_\_

• Second formula: \_\_\_\_\_

f.



• First formula: \_\_\_\_\_

• Second formula: \_\_\_\_\_

## 7. Fill in the blanks.

- a. A rectangle of 16 m length and 14 m width, its perimeter is \_\_\_\_\_
- b. A rectangle is 26 m long and 8 m width, its perimeter is \_\_\_\_\_
- c. The perimeter of a rectangle of 13 mm length and 5 mm width is \_\_\_\_\_
- d. A square of side length 8 cm, its perimeter is \_\_\_\_\_
- e. The perimeter of a square of side length 15 m is \_\_\_\_\_

8. Omar is building a rectangular fence around his garden. The length is 8 meters and the width is 6 meters. How many meters of fencing will he need to build?

9. Sarah is putting a border around the edge of a square cake. One side of the cake is 30 centimeters long. How long will the border of Sarah's cake be?

10. Sherif is building a square picture frame. Each side will be 36 millimeters long.  
What will the perimeter of the frame be?

11. A soccer team is roping off part of a field to play soccer. To have enough room for a large crowd, they need a space that is 105 meters long by 68 meters wide. How much rope will they need for this part of the field?

12. A carpenter ant walked a perimeter of 100 centimeters. Draw two different rectangles that could represent its walk.

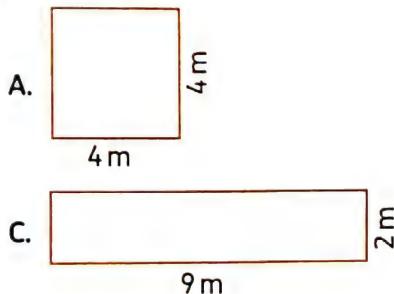
## Multiple Choice Questions

Choose the correct answer.

1. The length of a rectangle is  $l$ . The width is  $w$ . What is the formula to show the perimeter  $P$ ?
- A.  $P = l \times w$
  - B.  $P = l + w$
  - C.  $P = [2 \times l] + [2 \times w]$
  - D.  $P = [2 \times l] + w$

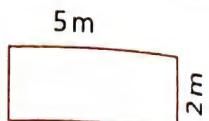
3. Which choice shows the formula for the perimeter of a square?
- ( $P$  = perimeter,  $s$  = side length)
- A.  $P = 4 + s$
  - B.  $P = 4 \times s$
  - C.  $P = s \times s$
  - D.  $P = s + s$

5. Which of the following has the same perimeter of this rectangle?



2. Which two choices show the formula for the perimeter of a rectangle?
- ( $P$  = perimeter,  $l$  = Length,  $w$  = Width)
- A.  $P = 2 \times [l + w]$
  - B.  $P = 4 \times l$
  - C.  $P = l + w + l + w$
  - D.  $P = [2 \times l] \times [2 \times w]$

4. The perimeter of the opposite rectangle equals \_\_\_\_\_
- A. 10 m
  - B. 20 m
  - C. 14 m



- B. 20 m  
D. 14 cm

6. Which rectangles have a perimeter of 12 meters? Select two correct answers.
- A. Rectangle A: 2 meters wide and 2 times as long.
  - B. Rectangle B: 1 meter wide and 5 times as long.
  - C. Rectangle C: 3 meters wide and 4 times as long.
  - D. Rectangle D: 4 meters wide and 3 times as long.
  - E. Rectangle E: 2 meters wide and 6 times as long.

7. Amal wants to find the perimeter of this rectangle.

- How can she calculate its perimeter?

- A. She can add  $12 + 4 + 12 + 4$  to find the perimeter is 32 meters.
- B. She can add  $12 + 4$  to find the perimeter is 16 meters.
- C. She can multiply  $12 \times 4 \times 12 \times 4$  to find the perimeter is 2,304 meters.
- D. She can multiply  $12 \times 4$  to find the perimeter is 48 meters.



## 4-2 Fill the Space

### "Use Formula to Find Area"

#### Learn

Using formula to find area of a rectangle

Sameh tiled the rectangular floor in his front hall.

He used square tiles that measure 1 meter on each side.

How many tiles did he use ?

#### One Way

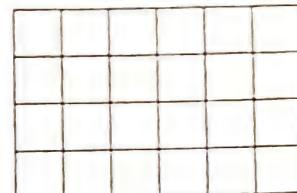
You can count square units to find the area.

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24

Record your answer in square units.

$A = 24$  square meters.

Hall Floor Plan



#### Remember

Area is the number of square units needed to cover the surface of a figure.

#### Another Way

You can also use a formula.

The formula for the area of a rectangle is

$$\text{Area} = \text{length} \times \text{width} \quad \text{Or} \quad A = l \times w$$

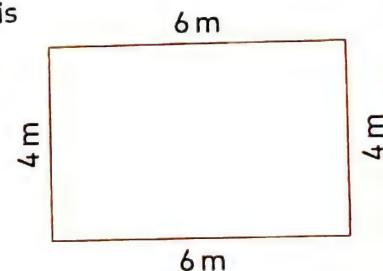
Use the formula to find the area.

$$A = l \times w$$

$$A = 6 \times 4$$

$$A = 24 \text{ square meters}$$

So, Sameh used 24 tiles.



#### Math tip

You can write square meters as  $m^2$

, and write square centimeters as  $cm^2$



#### Notes for parents :

-Ask your child to find area of a carpet in his/her room using a formula.

## Learn Using a formula to find area of a square

The formula for the area of a square is

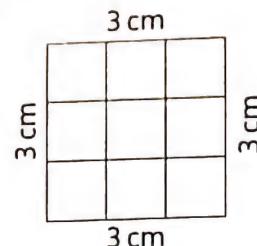
$$\text{Area} = \text{side length} \times \text{itself} \quad \text{Or} \quad A = s \times s$$

For example :

The area of the opposite square

$$A = s \times s = 3 \times 3$$

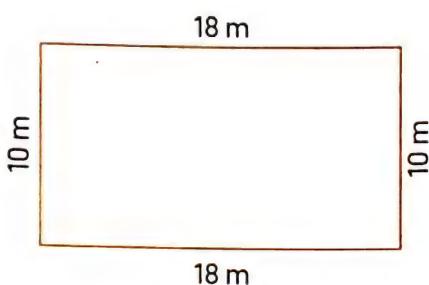
$$= 9 \text{ square centimeters } (\text{cm}^2)$$



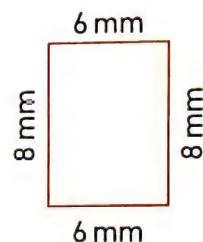
### Example 1

Find the area of each of the following.

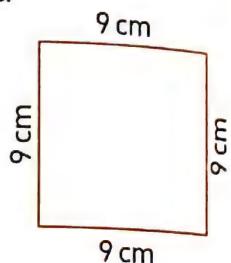
a.



b.



c.



### Solution

a.  $A = l \times w = 18 \times 10 = 180 \text{ m}^2$

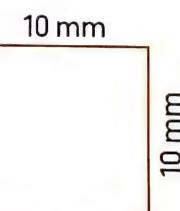
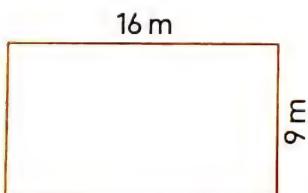
b.  $A = l \times w = 8 \times 6 = 48 \text{ mm}^2$

c.  $A = s \times s = 9 \times 9 = 81 \text{ cm}^2$

### Example 2

Find the area and perimeter of each figure.

a.



#### Remember

- Perimeter : Measurement of the distance **around** the shape.
- Area : Measurement of the space **inside** the shape.

#### Notes for parents :

- Ask your child to use a different formula to calculate the area of any rectangle in this page.

**Solution**

a.  $A = l \times w = 9 \times 16 = 9 \times [10 + 6] = 90 + 54 = 144 \text{ m}^2$   
 $P = 2 \times [l + w] = 2 \times [9 + 16] = 2 \times 25$   
 $= 2 \times [20 + 5] = 40 + 10 = 50 \text{ m}$

b.  $A = s \times s = 10 \times 10 = 100 \text{ mm}^2$   
 $P = 4 \times s = 4 \times 10 = 40 \text{ mm}$

**Example 3**

A small fish farm in the shape of a rectangle. Its dimensions are 10 meters and 8 meters. What is the area of the fish farm?

**Solution**

$$A = l \times w = 10 \times 8 = 80 \text{ m}^2$$

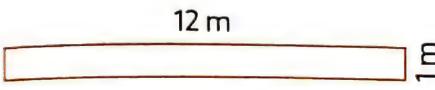
**Example 4**

The area of a piece of paper in the shape of a rectangle is 12 square meters. What is the perimeter of this piece? Draw your answer and write the dimensions.

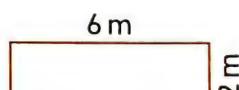
**Solution**

You need to find two numbers their product is 12, these two numbers are the rectangle dimensions

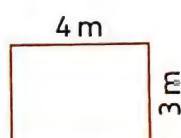
1 m and 12 m



2 m and 6 m



3 m and 4 m



$$\begin{aligned} P &= l + w + l + w \\ &= 1 + 12 + 1 + 12 \\ &= 13 + 13 = 26 \text{ m} \end{aligned}$$

$$\begin{aligned} P &= [2 \times l] + [2 \times w] \\ &= [2 \times 6] + [2 \times 2] \\ &= 12 + 4 = 16 \text{ m} \end{aligned}$$

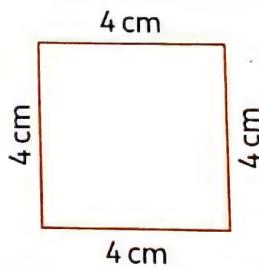
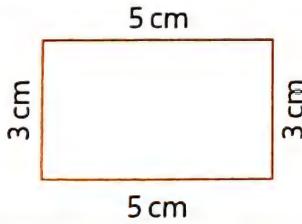
$$\begin{aligned} P &= 2 \times [l + w] \\ &= 2 \times (4 + 3) \\ &= 2 \times 7 = 14 \text{ m} \end{aligned}$$

You can use different formulas to calculate the perimeter of a rectangle.



**check** your understanding

► Circle the shape that has greater area.



- Challenge your child to draw many rectangles with area  $30 \text{ cm}^2$ .

## Exercise 22

### 4-2 Fill the Space "Use Formula to Find Area"

From the school book

REMEMBER

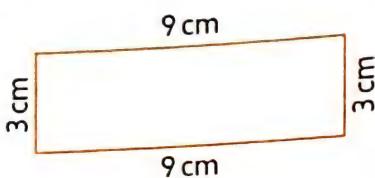
UNDERSTAND

APPLY

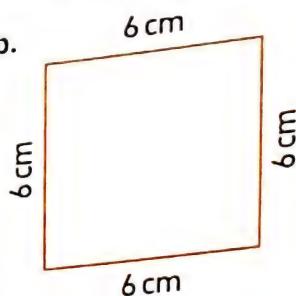
PROBLEM SOLVING

1. Write the formula of the area of each rectangle or square, then find its area.

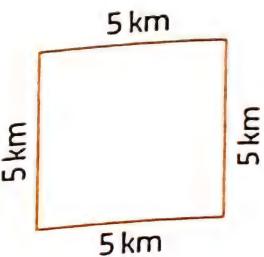
a.



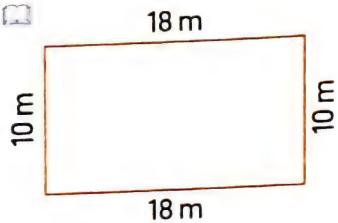
b.



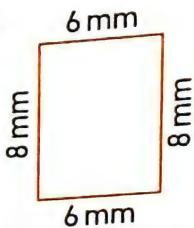
c.



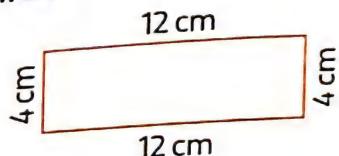
d.



e.

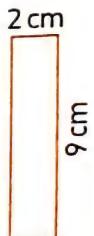


f.



2. Find the area and perimeter of the rectangles and squares.

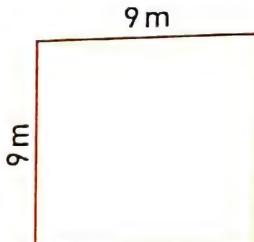
a.



Area = \_\_\_\_\_

Perimeter = \_\_\_\_\_

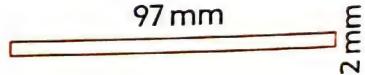
b.



Area = \_\_\_\_\_

Perimeter = \_\_\_\_\_

c.



Area = \_\_\_\_\_

Perimeter = \_\_\_\_\_

3. Complete each of the following.

- The area of a rectangle its dimensions are 5 cm and 3 cm is \_\_\_\_\_
- A rectangle is 7 km long and 6 km wide, its area equals \_\_\_\_\_
- The length of a rectangle is 10 mm and the width is 8 mm , then the area of this rectangle equals \_\_\_\_\_
- The area of a square of side length 8 m is \_\_\_\_\_
- A side length of a square is 10 cm, its area is \_\_\_\_\_

4. A glass company is cutting a piece of glass to cover the top of a banquet table. The table measures 8 meters by 6 meters. What is the area of the glass needed for the table ?

5. Andy is putting carpet in a room that measures 4 m by 5 m. How many square meters of carpet does he need ?

6. A small rectangular ant farm measures 20 centimeters by 8 centimeters. What is the area of the ant farm ?

7. For a science project, two students are creating an ant farm enclosure. Their enclosure will be 5 meters long and 2 meters wide. Sketch the enclosure and label the dimensions. Then, find the perimeter and area.

8. Sketch two rectangles, the area of each one is  $20 \text{ cm}^2$ . Find the perimeter of each.



- First

$$P =$$

- Second

$$P =$$

9. You have 36 square carpet tiles to arrange on the floor in the shape of a rectangle. Draw two possible arrangements and label the length and width. What is the perimeter of each arrangement? What is the area?

- First

$$A =$$

$$P =$$

- Second

$$A =$$

$$P =$$

10. The area of a rectangular bakery is 30 square meters.

- What could the perimeter be? Sketch your answer and label the dimensions.



## Challenge

11. Ganat wants to create a long piece of artwork and needs two sheets of paper to do it.
- Each piece of paper is 6 meters long and 2 meters wide and will be connected so two short edges touch. When she finishes the art, she has to decide whether to frame it or to hang it and cover it with glass. Ganat needs to know the measurements of the frame and the glass to make her decision.
  - What is the measurement of the frame? Should you calculate area or perimeter to find that measurement?
  - What is the measurement of the glass? Should you calculate area or perimeter to find that measurement?



choose the correct answer.

1. The length of a rectangle is b. The width is c. What is the calculation for the area ?
- $b + c$
  - $b \times c$
  - $[2 \times b] + [2 \times c]$
  - $[2 \times b] \times [2 \times c]$

3. Walid has a rectangular garden that is 5 meters long and 4 times as wide. What is the area of Walid's garden ?
- 9 square meters.
  - 50 square meters.
  - 20 square meters.
  - 100 square meters.

5. Eva needs to calculate the area of her room in order to buy new flooring. The room has the shape of a rectangle with a length of 10 meters and a width of 5 meters. How should Eva calculate the area of the room ?
- Multiply 10 and 5
  - Divide 10 by 5
  - Subtract 5 from 10
  - Add 5 and 10

6. A rectangular garden is 5 meters wide and 7 meters long. What is the area of the garden ?
- $[2 \times 5] + [2 \times 7] = 24$  square meters.
  - $[7 \times 5] + [7 \times 5] = 70$  square meters.
  - $7 \times 5 = 35$  square meters.
  - $7 + 5 = 12$  square meters.

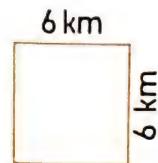
7. Which two choice has the same perimeter but different in area ?

- 
- 
- 
- 

8. Which two choice has the same area but different in perimeter ?

- 
- 
- 
- 

2. The area of the opposite figure equal \_\_\_\_\_
- 24 km
  - 36 km
  - $36 \text{ km}^2$
  - $24 \text{ km}^2$



4. The area of a piece of paper in the shape of a square with side length 8 cm equal \_\_\_\_\_  $\text{cm}^2$
- 64
  - 16
  - 32
  - 80

## 4-3 Something Is Missing!

## Learn

Use formulas to calculate the unknown dimension of a rectangle

1. How to find the unknown dimension of a rectangle given its area

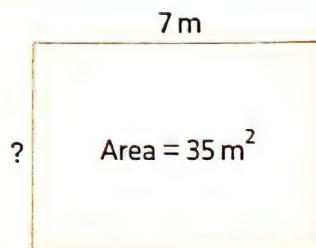
Amal made a rectangular flower garden with an area of 35 square meters and its length is 7 meters.

How long is its width?



**Remember**

Area of a rectangle = length × width



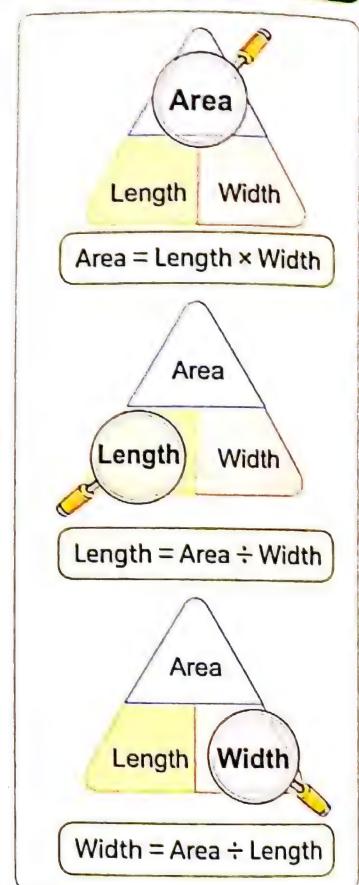
Use the formula to find the unknown width [w].

$$A = l \times w$$

$$w = A \div l$$

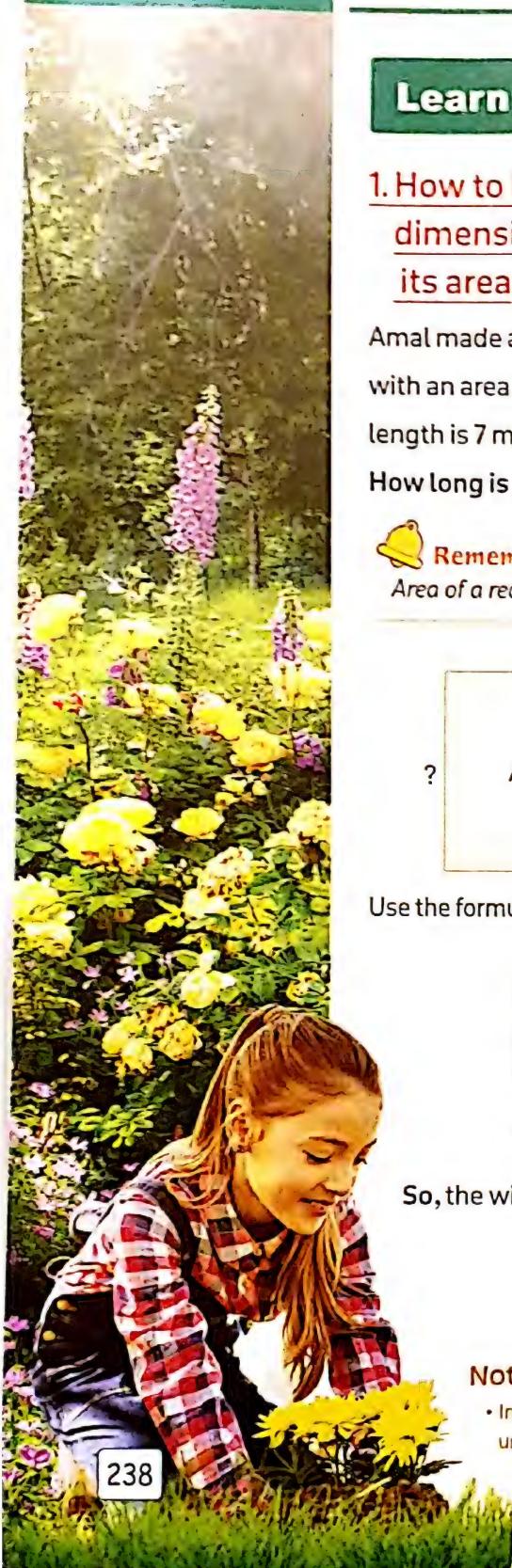
$$w = 35 \div 7 = 5 \text{ m.}$$

So, the width of the garden is 5 meters.



**Notes for parents :**

- In this lesson, your child will apply area and perimeter formulas to solve for an unknown dimension in a rectangle or a square.



## 2. How to find the unknown dimension of a rectangle given its perimeter

A rectangular piece of paper has a perimeter 28 cm and width 6 cm.

How long is its length?

?



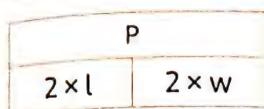
**Perimeter of a rectangle =  $(2 \times \text{length}) + (2 \times \text{width})$**

Perimeter = 28 cm      6 cm

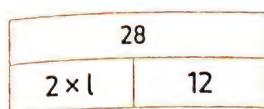
- Use the formula to find the unknown length ( $l$ ).

$$P = [2 \times l] + [2 \times w]$$

- Use the bar model



[Think:  $2 \times w = 2 \times 6 = 12$ ]



$$2 \times l = 28 - 12$$

$$2 \times l = 16$$

$$l = 16 \div 2 = 8 \text{ cm}$$

So, the length is 8 cm.

### Another Way

- width = half of perimeter – length
- length = half of perimeter – width
- Half of perimeter =  $28 \div 2 = 14$
- Length =  $14 - 6 = 8 \text{ cm}$

## Conclusion

### In a rectangle

$l$  = length,  $w$  = width,  $P$  = perimeter,  $A$  = area

$$A = l \times w$$

$$P = 2 \times (l + w)$$

$$\bullet l = A \div w$$

$$\bullet l = [P \div 2] - w$$

$$\bullet w = A \div l$$

$$\bullet w = [P \div 2] - l$$

## Example 1

- The area of a rectangle is  $28 \text{ cm}^2$ . If its width equals 4 cm, find its length and its perimeter.
- The perimeter of a rectangle is 20 m. If its length equals 6 m, find its width and its area.

### Solution

a.  $A = 28 \text{ cm}^2$      $w = 4 \text{ cm}$      $l = ?$

$$\begin{aligned} \bullet l &= A \div w \\ &= 28 \div 4 = 7 \text{ cm} \\ \bullet P &= 2 \times [l + w] \\ &= 2 \times [7 + 4] \\ &= 2 \times 11 = 22 \text{ cm}. \end{aligned}$$

b.  $P = 20 \text{ m}$      $l = 6$      $w = ?$

$$\begin{aligned} P \div 2 &= 20 \div 2 = 10 \text{ m} \\ \bullet w &= [P \div 2] - l = 10 - 6 = 4 \text{ m} \\ \bullet A &= l \times w = 6 \times 4 = 24 \text{ m}^2 \end{aligned}$$

\* Remind your child of the formulas of perimeter of a rectangle. [ $P = (2 \times l) + (2 \times w)$ ,  $P = 2 \times (l + w)$ ].

## Learn Use formulas to calculate the side length of a square

### 1. How to find the side length of a square given its area

A square is of area 36 cm<sup>2</sup>.

What is its side length?



#### Remember

Area of a square = side length × side length

- Use the formula to find the unknown side length

$$A = s \times s$$

$$36 = s \times s$$

$$s = 6 \text{ cm} \text{ [because } 6 \times 6 = 36]$$

#### Hint

Look for a number if multiplied by itself gives the area.

### 2. How to find the side length of a square given its perimeter

A square is of perimeter 36 cm.

What is its side length?

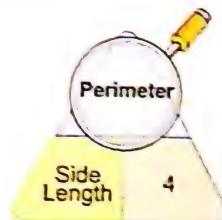
perimeter  
= 36 cm

?



#### Remember

Perimeter of a square = side length × 4



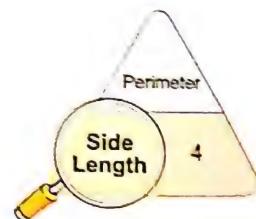
$$\text{Perimeter} = \text{Side length} \times 4$$

- Use the formula to find the unknown side length [s]

$$P = s \times 4$$

$$36 = s \times 4$$

$$s = 36 \div 4 = 9 \text{ cm}$$



$$\text{Side length} = \text{Perimeter} \div 4$$

#### Notes for parents :

- Ask your child questions as : Which number if multiplied by itself you get 16, 25, 36, 49, ... ?

## Conclusion

### In a square

$s$  = side length ,  $P$  = perimeter ,  $A$  = area

$$A = s \times s$$

$s$  is a number if multiplied by itself gives area

$$P = s \times 4$$

$$s = P \div 4$$



### Example 2

- a. A square is of area  $16 \text{ m}^2$ . Find its side length and its perimeter.
- b. A square is of perimeter  $32 \text{ cm}$ . Find its side length and its area.

### Solution

a.  $A = 16 \text{ m}^2 \quad s = ?$

- $s = 4 \text{ m}$  [because  $4 \times 4 = 16$ ]
- $P = 4 \times s = 4 \times 4 = 16 \text{ m}$

b.  $P = 32 \text{ cm} \quad s = ?$

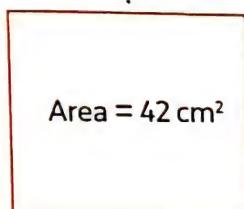
- $s = P \div 4 = 32 \div 4 = 8 \text{ cm}$
- $A = s \times s = 8 \times 8 = 64 \text{ cm}^2$



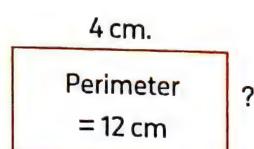
### Check your understanding

► Find the unknown length in each of the following rectangles or squares.

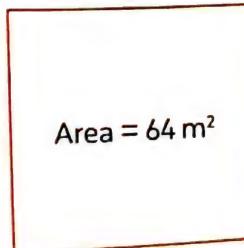
a.



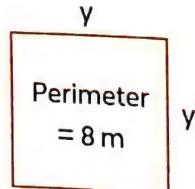
b.



c.



d.



• Revise with your child time table 4. Practise him/her how he/she can divide by 4.

## Exercise 23

### 4-3 Something Is Missing!

REMEMBER

UNDERSTAND

APPLY

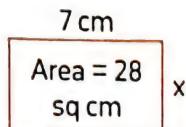
PROBLEM SOLVING

From the school book

1. Find the unknown side length based on the area given of each rectangle.



a.




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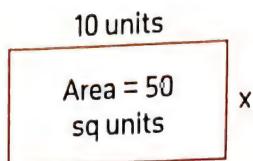


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b.




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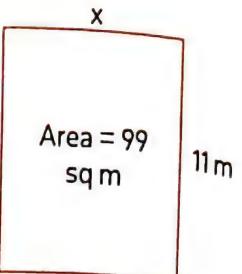


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c.




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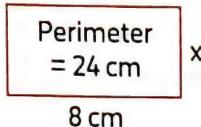


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2. Find the unknown side length based on the perimeter given of each rectangle.



a.




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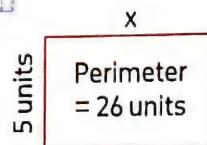


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b.




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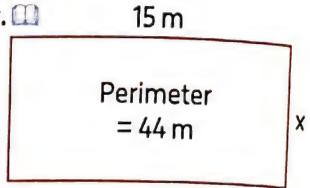


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c.




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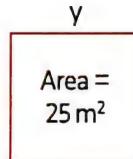


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3. Find the unknown side length based on the area given of each square.



a.




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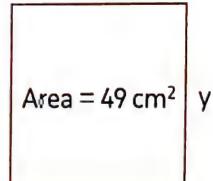


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b.




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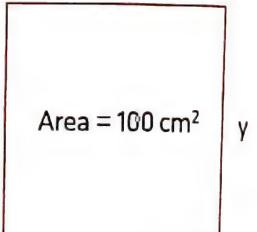


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c.




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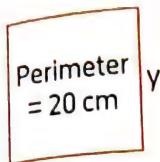
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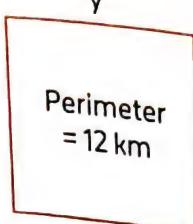
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4. Find the unknown side length based on the perimeter given of each square.

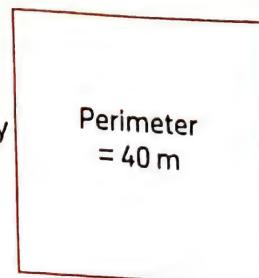
a.



b.



c.



5. Complete the following table of rectangles.

o

Length	Width	Area	Perimeter
a. 5 cm	10 cm	_____	_____
b. _____	5 m	10 m <sup>2</sup>	_____
c. 9 km	_____	72 km <sup>2</sup>	_____
d. 6 dm	_____	_____	22 dm
e. _____	2 mm	_____	18 mm

6. Complete the following table of squares.

o

Side length	Area	Perimeter
a. 9 m	_____	_____
b. _____	64 cm <sup>2</sup>	_____
c. _____	_____	36 mm

7. Complete each of the following.

o

- A square is of area  $49 \text{ km}^2$ , then its side length is \_\_\_\_\_
- A square has a perimeter 12 cm, then its area is \_\_\_\_\_
- A square has an area  $9 \text{ m}^2$ , then its perimeter is \_\_\_\_\_
- The area of a rectangle is  $42 \text{ km}^2$ , and its width is 6 km, then its length is \_\_\_\_\_
- The area of a rectangle is  $45 \text{ m}^2$ , and its length is 9 m, then its perimeter is \_\_\_\_\_
- A rectangle is of perimeter 26 cm, and its width is 4 cm, then its length is \_\_\_\_\_
- A rectangle is of perimeter 32 m, and its length is 9 m, then its area is \_\_\_\_\_

8. A rectangular flowerbed in the city park has an area of 12 square meters. The width of the flowerbed is 3 meters. What is the length of the flowerbed?

9. Ali sketch a rectangular painting with an area of  $28 \text{ cm}^2$ , the width of his painting is 4 cm  
Find its perimeter.

10. Tahani is building a square picture frame for her father. The picture she has to frame has an area of 144 square centimeters. What is the width and the length of her frame? Sketch the frame and show your work.

11. Emad is building a pen with 26 m of fencing.  
What is the length and the area of it if its width is 6 m?

12. Mai walked once around the squared playground. She covered a distance of 40 m.  
What is the area of this playground?

13. Soliman works on a farm. The fence for the goats fell down, and his uncle asked Soliman to get more wire to make a new fence. He was told that the width of the fence is 25 meters and that he needs to get 110 meters of wire to go around the entire space. What is the length of the missing side? Sketch the fence and find the missing length.

14. A rectangle is 6 meters wide. The length is 2 meters more than its width. What is the area and perimeter of the rectangle?

## Challenge

15. Mathew has two pictures, both with an area of  $36 \text{ cm}^2$ . One is a rectangle with length 9 cm, and the other is a square. Which has the greater perimeter?

## Multiple Choice Questions



Choose the correct answer.

1. Length of a rectangle = \_\_\_\_\_

- A. Area ÷ length
- B. Area ÷ width
- C. Length × width
- D. Area × width

3. A square with a perimeter 32 cm, then the side length of the square equals \_\_\_\_\_

- A. 8 cm
- B. 4 cm
- C. 16 cm
- D. 64 cm

2. A rectangle with an area  $30 \text{ cm}^2$ . If its length is 6 cm, then its width equals \_\_\_\_\_

- A. 6 cm
- B. 5 m
- C. 5 cm
- D. 30 cm

4. The value of  $x$  is \_\_\_\_\_

- A. 10 m
- B. 20 m
- C. 6 m
- D. 4 m

6 m

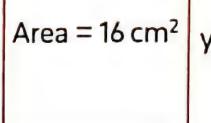
Perimeter = 20 m

$x$

5. The value of  $y$  is \_\_\_\_\_

- A. 4 cm
- B. 6 cm
- C. 10 cm
- D. 8 cm

$y$



6. A rectangle with area  $15 \text{ cm}^2$  and width 3 cm.

What is its perimeter?

- A. 8 cm
- B. 15 cm
- C. 16 cm
- D.  $16 \text{ cm}^2$

7. A square with area  $1 \text{ m}^2$ .

What is its perimeter?

- A. 1 m
- B. 2 m
- C. 3 m
- D. 4 m

8. Nancy's rectangular room is 8 meters

long and has a perimeter of 24 meters.  
What is the width of the room?

- A. 16 meters
- B. 3 meters
- C. 8 meters
- D. 4 meters

9. Elen wants to find the measure of the

length of a rectangle with area  $18 \text{ cm}^2$  and width 3 cm. How can she find the length?

- A. She can add  $18 + 3 + 18 + 3$
- B. She can multiply  $18 \times 3$
- C. She can divide  $18 \div 3$
- D. She can add  $18 + 3$

## 4-4 Odd Shapes

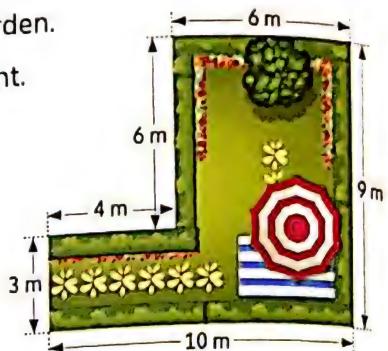
**Learn** How to find perimeter and area of complex figures

Andy wants to put a fence around his garden.

The space he will use is shown at the right.

How much fence should he buy?

What is the area of his garden?

Find the perimeter

Add the lengths of the sides.

$$\text{Perimeter} = 10 + 3 + 4 + 6 + 6 + 9 = 38 \text{ m}$$

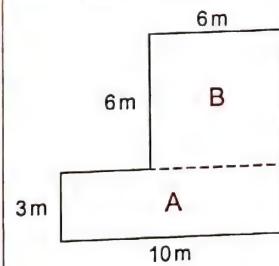
He should buy 38 meters of fence.

Find the area

There are many ways to calculate the area.

**Step 1**

Separate the figure into a rectangle **A** and a square **B**.

**Step 2**

Calculate to find the area of each figure.

**Area of the rectangle A**

$$\begin{aligned} A &= l \times w \\ &= 10 \times 3 \\ &= 30 \text{ sq m} \end{aligned}$$

**Area of the square B**

$$\begin{aligned} A &= s \times s \\ &= 6 \times 6 = 36 \text{ sq m} \end{aligned}$$

**Step 3**

Add both areas to find the area of the whole figure.

$$30 + 36 = 66 \text{ sq m}$$

**The area of the garden is 66 square meters.**

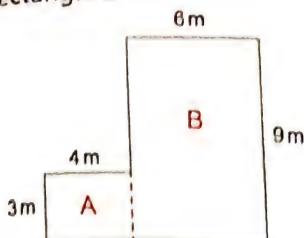
**Notes for parents :**

- In this lesson, your child will learn and apply strategies for calculating the area and perimeter of complex shapes. Your child will use a variety of strategies to break shapes down into squares and rectangles to calculate their measurements.

### Another Way to find area

#### Step 1

Separate the figure into a rectangle A and a rectangle B



#### Step 2

Calculate to find the area of each figure.

**Area of the rectangle A**

$$\text{Area} = l \times w \\ = 4 \times 3 = 12 \text{ sq m}$$

**Area of the rectangle B**

$$\text{Area} = l \times w \\ = 9 \times 6 = 54 \text{ sq m}$$

#### Step 3

Add both areas to find the area of the whole figure.

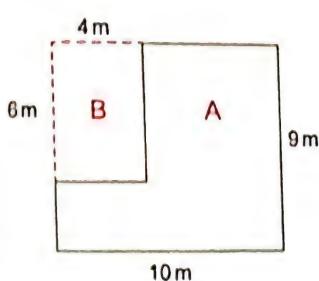
$$12 + 54 = 66 \text{ sq m}$$

The area of the garden is 66 square meters.

### Another Way to find area

#### Step 1

Complete the figure as a big rectangle A and a small rectangle B



#### Step 2

Calculate to find the area of each figure.

**Area of the rectangle A**

$$\text{Area} = l \times w \\ = 10 \times 9 = 90 \text{ sq m}$$

**Area of the rectangle B**

$$\text{Area} = l \times w \\ = 6 \times 4 = 24 \text{ sq m}$$

#### Step 3

Subtract areas to find the area of the whole figure.

$$90 - 24 = 66 \text{ sq m}$$

The area of the garden is 66 square meters.

### Note

The area of a complex figure does not change when divided in different ways.



- Make sure what your child understand the area of a complex figure does not change when he/she calculate in different ways.



**Example 1**

Calculate the perimeter and area of the figure.

**Solution**

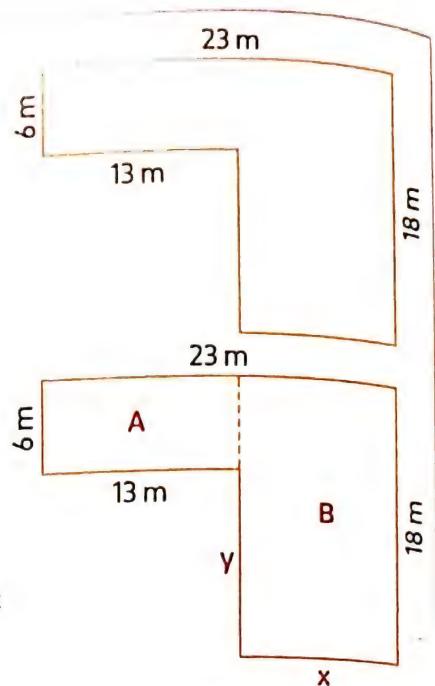
First you should find the length of the unknown sides  $x$  and  $y$

$$x = 23 - 13 = 10 \text{ m} \quad y = 18 - 6 = 12 \text{ m}$$

$$\text{The perimeter} = 23 + 18 + 10 + 12 + 13 + 6 = 82 \text{ m}$$

The area = Area of section A + Area of section B

$$\begin{aligned} &= [13 \times 6] + [18 \times 10] \\ &= [10 + 3] \times 6 + 180 \\ &= [10 \times 6] + [3 \times 6] + 180 = 60 + 18 + 180 = 258 \text{ m}^2 \end{aligned}$$

**Example 2**

Combine these two simple shapes to form a complex shape.

Sketch your shape, labeling the sides.

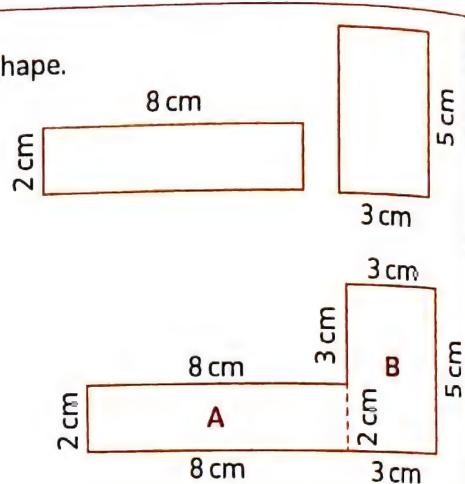
Then calculate the perimeter and the area of the complex shape.

**Solution**

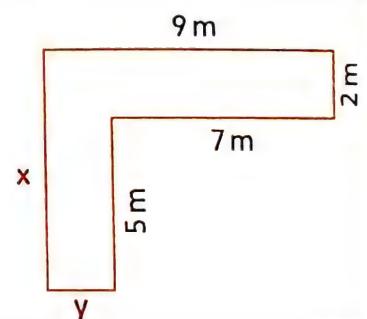
$$\bullet \text{The perimeter} = 8 + 3 + 3 + 5 + 3 + 8 + 2 = 32 \text{ cm}$$

$\bullet$  The area = Area of section A + Area of section B

$$= [8 \times 2] + [5 \times 3] = 16 + 15 = 31 \text{ cm}^2$$

**Check your understanding**

Find the perimeter and the area of each of the complex figure.

**Notes for parents :**

- The perimeter of the complex shape may be equal different results according to how you form this complex shape, but the area of the complex shape do not change.

# Exercise 24

## 4-4 Odd Shapes

REMEMBER

CONNECT AND

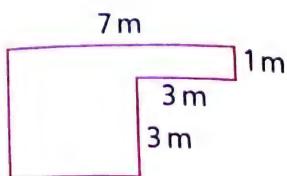
APPLY

PROBLEM SOLVING

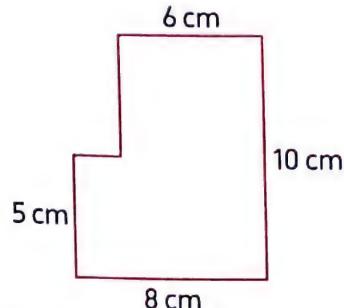
From the school book

1. Calculate the area and perimeter of the complex shapes. Show your work.

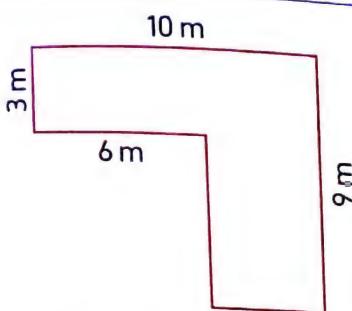
a.



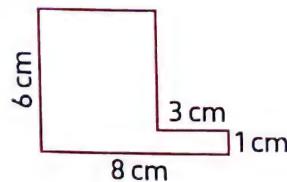
b.



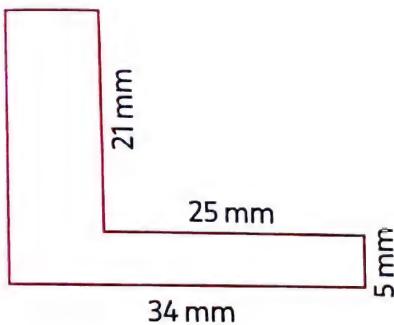
c.



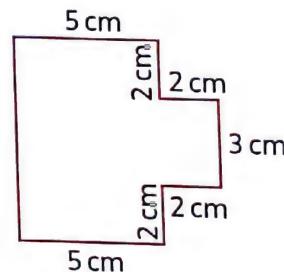
d.



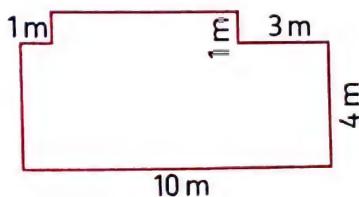
e.



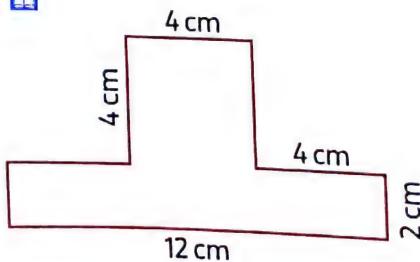
f.



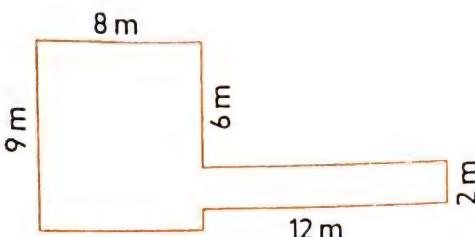
g.



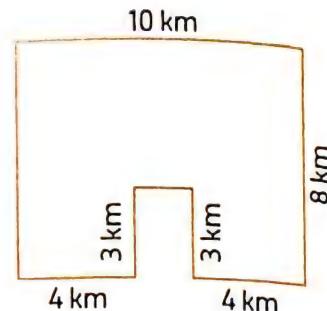
h.



i. (1)



j.

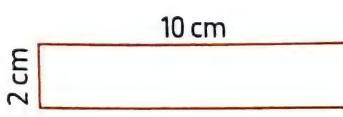


2. Combine these two simple shapes into a complex shape. Sketch your shape, labeling the sides.

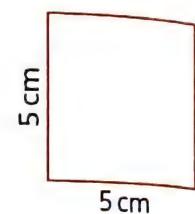
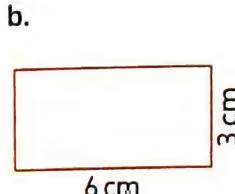


Then, calculate the area and perimeter for the complex shape.

a. (1)

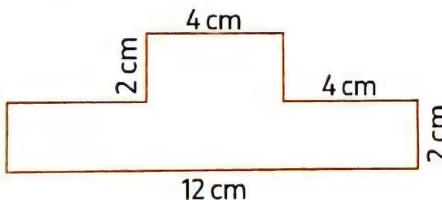


b.



## Challenge

3. When Reem calculated the perimeter and area of this shape, she found that the perimeter was 36 centimeters and the area was 32 square centimeters. Only one of those measurements is accurate.

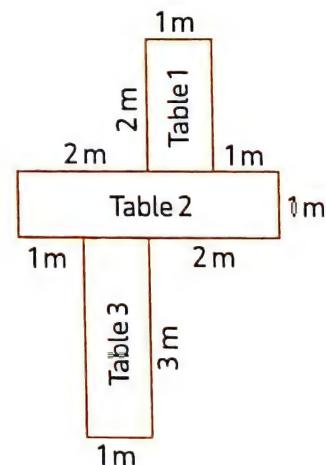


a. Which of Reem's measurement is accurate? Show how you know.

b. What is the correct answer for Reem's incorrect measurement? Show how you know.

c. Why do you think Reem made that error?

4. A company pushes together three tables for a team meeting. What is the area of the figure made by the tables? Explain how you know.

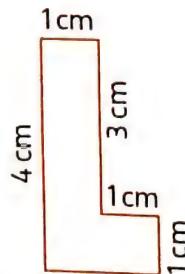


## Multiple Choice Questions

Choose the correct answer.

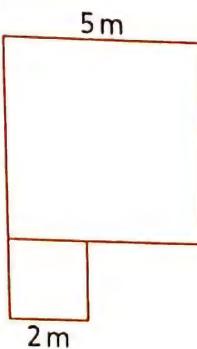
1. What is the perimeter of the figure?

- A. 10 cm
- B. 12 cm
- C. 13 cm
- D. 15 cm



3. Two squares are joined to make a figure. What is the perimeter of the figure?

- A. 7 m
- B. 10 m
- C. 24 m
- D. 35 m

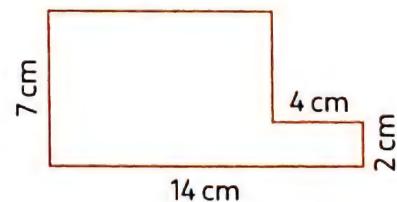


5. If you combine the two rectangles to make a complex figure, what is the area of the resulted figure?

- A.  $18 \text{ cm}^2$
- B.  $31 \text{ cm}^2$
- C.  $36 \text{ cm}^2$
- D.  $40 \text{ cm}^2$

2. What is the area of the figure?

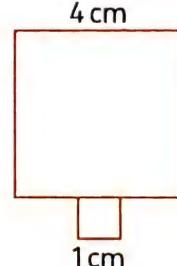
- A.  $24 \text{ cm}^2$
- B.  $42 \text{ cm}^2$
- C.  $78 \text{ cm}^2$
- D.  $87 \text{ cm}^2$



4. Two squares are joined to make a figure.

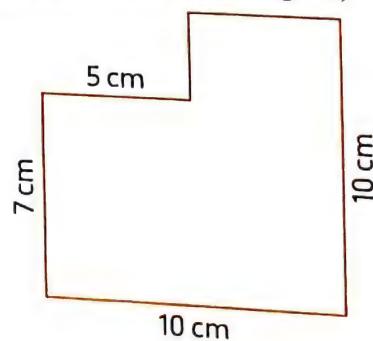
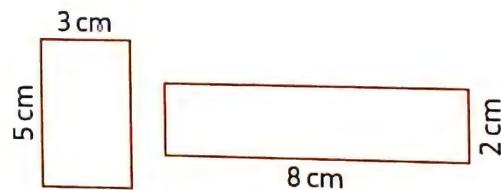
- What is the area of the figure?

- A.  $5 \text{ cm}^2$
- B.  $17 \text{ cm}^2$
- C.  $18 \text{ cm}^2$
- D.  $20 \text{ cm}^2$



6. Hani drew a sketch of his room to look like using centimeters as in the opposite figure, the perimeter of the sketch equal \_\_\_\_\_

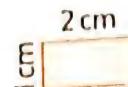
- A. the perimeter of a square of side length 12 cm
- B. the perimeter of a square of side length 10 cm
- C. the perimeter of a rectangle with 10 cm long and 5 cm wide.
- D. the perimeter of a rectangle with two dimensions 8 cm, 7 cm.



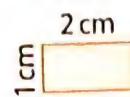
## 4-5 Growing Dimensions

## Learn

Look at the rectangle

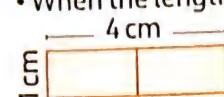


- What will happen to the area of the rectangle if the length is doubled and if tripled ?



$$\text{Area} = 2 \times 1 = 2 \text{ cm}^2$$

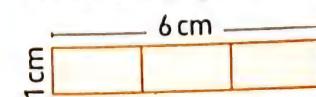
- When the length is doubled.



$$\text{Area} = 4 \times 1 = 4 \text{ cm}^2$$

The area doubles too.

- When the length is tripled.



$$\text{Area} = 6 \times 1 = 6 \text{ cm}^2$$

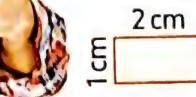
The area triples too.



## Math tip

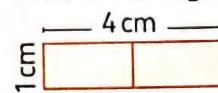
- Double means ( $\times 2$ )
- Triple means ( $\times 3$ )

- What will happen to the perimeter of the rectangle if the length is doubled and if tripled ?



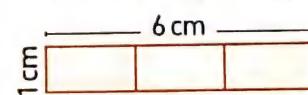
$$\text{Perimeter} = 2 \times [2 + 1] = 2 \times 3 = 6 \text{ cm}$$

- When the length is doubled.



$$\text{Perimeter} = 2 \times [4 + 1] = 2 \times 5 = 10 \text{ cm}$$

- When the length is tripled.



$$\text{Perimeter} = 2 \times [6 + 1] = 2 \times 7 = 14 \text{ cm}$$

You can use connected rectangles to form a perimeter pattern

6, 10, 14

A rule is add 4.

## Notes for parents :

- In this lesson, your child will use area and perimeter formulas to solve multiplicative comparison problems.

**Notes**

- Double (Twice) means to multiply by 2
- Triple means to multiply by 3
- Two times means to multiply by 2
- Three times means to multiply by 3
- Four times means to multiply by 4
- Half means to divide by 2
- Third means to divide by 3

**Examples**

- Double the number 4  $\rightarrow 4 \times 2 = 8$
- Twice the number 5  $\rightarrow 5 \times 2 = 10$
- Triple the number 2  $\rightarrow 3 \times 2 = 6$
- Two times the number 10  $\rightarrow 2 \times 10 = 20$
- Three times the number 6  $\rightarrow 3 \times 6 = 18$
- Four times the number 9  $\rightarrow 4 \times 9 = 36$

**Example 1**

A rectangle with width 5 cm and its length is 4 times the width. Draw the rectangle and write the measure of its sides then find the area and perimeter.

**Solution**

$$\bullet w = 5 \text{ cm} \quad l = 4 \times 5 = 20 \text{ cm}$$

$$\bullet \text{Area} = l \times w$$

$$= 20 \times 5 = 100 \text{ cm}^2$$

$$\bullet \text{Perimeter} = 2 \times [l + w] = 2 \times [20 + 5] = 50 \text{ cm}$$

**Example 2**

A rectangle is 30 square meters. The longer side of it is 10 meters. Another rectangle is three times as long and three times as wide as the first rectangle.

What is the perimeter of the second rectangle?

**Solution**

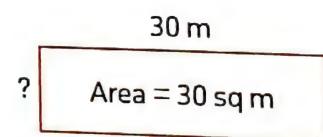
$$\bullet \text{First rectangle: } A = 30 \text{ m}^2 \quad l = 10 \text{ m} \quad w = ?$$

$$w = A \div l = 30 \div 10 = 3 \text{ m}$$

$$\bullet \text{Second rectangle: } l = 3 \times 10 = 30 \text{ m}$$

$$w = 3 \times 3 = 9 \text{ m}$$

$$\begin{aligned} \text{The perimeter of second rectangle} &= [2 \times l] + [2 \times w] \\ &= [2 \times 30] + [2 \times 9] \\ &= 60 + 18 = 78 \text{ m} \end{aligned}$$



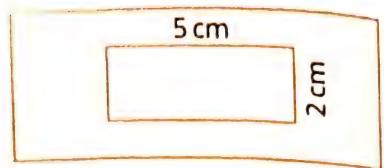
- In a multiplicative comparison problems, one quantity will always be smaller or larger than the other quantity.

**Example 3**

In the opposite figure :

The length of the large rectangle is twice the length of the smaller rectangle. The width of the large rectangle is four times the length of smaller one.

Find the area of colored part.

**Solution**

- The length of the large rectangle =  $2 \times 5 = 10 \text{ cm}$
- The width of the large rectangle =  $4 \times 2 = 8 \text{ cm}$
- Area of the large rectangle =  $l \times w = 10 \times 8 = 80 \text{ cm}^2$
- Area of the smaller rectangle =  $l \times w = 5 \times 2 = 10 \text{ cm}^2$
- Area of colored part =  $80 - 10 = 70 \text{ cm}^2$

**check**

your understanding

1. What is the area of this rectangle ?

---

2. What will happen to the area if the length is doubled ?

---



3. What will happen to the area if the length is tripled ?

---

4. What will happen to the area of the original rectangle if both the length and width are doubled ?

---

**Notes for parents :**

- Your child may start out feeling comfortable using additive comparisons instead of multiplicative. "For example to find 4 times the number 2 use repeated addition  $2 + 2 + 2 + 2 = 8$ "

## Exercise 25

### 4-5 Growing Dimensions

REMEMBER

UNDERSTAND

APPLY

PROBLEM SOLVING

From the school book

1. A rectangle is 5 centimeters wide. It is 4 times as long as its wide. Draw the rectangle, label the dimensions, and find its area and perimeter.

Area =

Perimeter =

2. Calculate the area and perimeter of a rectangle whose length is twice its width, if its width is 6 m.

Area =

Perimeter =

3. A length of a rectangle is 10 dm, find its area and perimeter if its width half its length

Area =

Perimeter =

4. Rectangle with 4 cm width and the length is triple its width. Find the area and the perimeter.

Area =

Perimeter =

5. Rectangle with 5 m width and its length is double the width. Find its perimeter and area.

Area =  
Perimeter =

6. Adam's rectangular garden is 20 square meters. The longer side of the garden is 5 meters.

- Sketch a drawing of Adam's garden. Dalia's garden is three times as long and three times as wide as Adam's rectangular garden. What is the perimeter of Dalia's garden ?

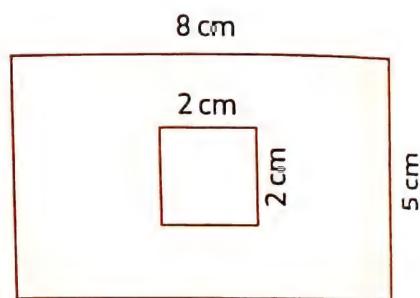


7. The area of Mohamed's basketball court at home is 15 square meters. The longer side is 5 meters. Sketch a drawing of Mohamed's basketball court. The basketball court he plays in at the park is two times as long and two times as wide. Find the perimeter and area for both basketball courts.

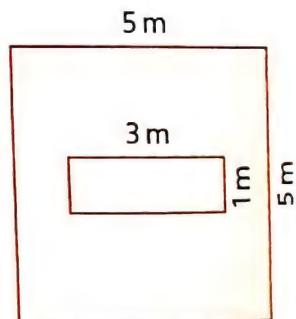
8. Mariam painted a mural for the school with an area of 24 square meters and a length of 8 meters. What is the width of her mural? Her next mural will be the same length as the first but three times as wide. What is the perimeter of her next mural? What is the area?

9. Calculate the area of the shaded part of the figure.

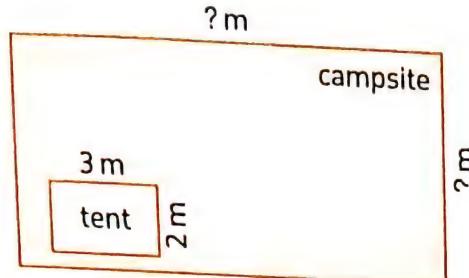
a.



b.



10. Rami and Salah went on a camping trip. The diagram of their campsite is shown. If the length of the campsite is six times the length of the tent and the width of the campsite is three times the width of the tent, how much room will they have left to set up the rest of their camping gear?



11. Worker ants from three different colonies are in search of food.

They use pheromones to lay a scent trail, and follow each other in a line around picnic blankets.

- Colony A's ants walk around a blanket that is 2 meters wide and has an area of 12 square meters.
- Colony B's blanket is twice as wide as Colony A's blanket [but the same length].
- Colony C's blanket is three times as wide as Colony A's blanket [but the same length].

Draw and label a picture to represent each blanket. Find the area and perimeter for each blanket.

## Challenge

12. The length of a rectangle is three times its width. If its perimeter is 40 cm. Find its area.

## Multiple Choice Questions

Choose the correct answer.

1. If a rectangle of width 5 cm and its length is twice the width, then its area = \_\_\_\_\_  $\text{cm}^2$
- A. 15      B. 50      C. 25      D. 100

2. If a rectangle of width 3 m and its length is four times its width, then its perimeter = \_\_\_\_\_ m
- A. 14      B. 7      C. 30      D. 36

3. A rectangle with width 4 cm. If its length is three times of the width, then the length of the rectangle = \_\_\_\_\_ cm
- A. 7      B. 8      C. 4      D. 12

4. The area of the shaded part of the figure equal \_\_\_\_\_  $\text{cm}^2$
- A. 16      B. 44      C. 50      D. 6
- 

5. A rectangle with length 10 cm and if its width is half the length, then the width = \_\_\_\_\_ cm
- A. 10      B. 15      C. 5      D. 2

6. The perimeter of a square is 2 times the perimeter of a rectangle whose dimensions 6 cm and 4 cm. What is the side length of the square ?
- A. 10 cm      B. 20 cm      C. 40 cm      D. 80 cm

7. A rectangle with length  $x$  cm and width 5 cm if another rectangle with the same length but its width is twice the width of the first one, then

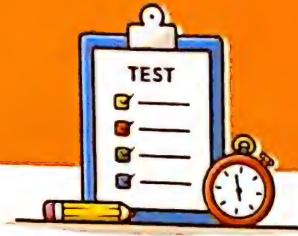
- a. The formula of area of the second rectangle is \_\_\_\_\_

A.  $A = x \times 5$       B.  $A = x + 10$       C.  $A = x \times 10$       D.  $A = 2x \times 10$

- b. The formula of perimeter of the second rectangle is \_\_\_\_\_

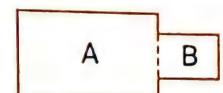
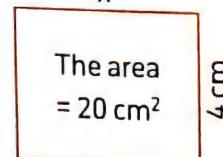
A.  $P = 2x(x + 5)$       B.  $P = 2 \times (2x + 5)$       C.  $P = 2 \times (x + 10)$       D.  $P = 4 \times 5$

# Unit Four Assessment



1. Put (✓) to the correct answer and (✗) to the incorrect answer.

- a. The formula of the perimeter of the rectangle is  $P = 2l + 2w$  [ ]
- b. The area of a square of side length 5 cm equals 25 cm. [ ]
- c. In the opposite figure:  
The value of  $x$  is 5 cm. [ ]
- d. The perimeter of the opposite figure  
equals perimeter of A + perimeter of B. [ ]
- e. The area of the rectangle does not change if its length increases 4 times. [ ]
- f. Width of the rectangle = its area ÷ its length. [ ]



2. Choose the correct answer.

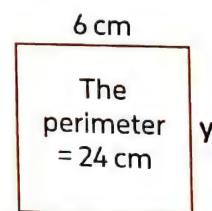
- a. The area of the rectangle with 5 cm long and 3 cm wide equals \_\_\_\_\_

A.  $16 \text{ cm}^2$       B. 15 cm      C.  $15 \text{ cm}^2$       D. 16 cm

- b. In the opposite figure:

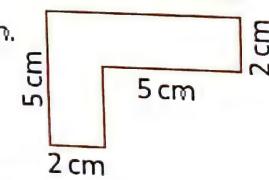
The value of  $y$  is \_\_\_\_\_

- A. 4 cm      B. 5 cm  
C. 6 cm      D. 7 cm



- c. The perimeter of the opposite complex figure equals \_\_\_\_\_ cm.

- A. 14      B. 21  
C. 19      D. 24



- d. A rectangle with width 5 cm and if its length is twice the width, then its area

= \_\_\_\_\_  $\text{cm}^2$

- A. 25      B. 50      C. 30      D. 40

- e. Area of square = \_\_\_\_\_

- A.  $2l + 2w$       B.  $l + w$       C.  $l \times w$       D.  $s \times 4$

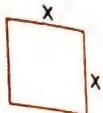
- f. The perimeter of a square of side length 10 m is \_\_\_\_\_ m.

- A. 30      B. 100      C. 20      D. 40

**3. Complete the following.**

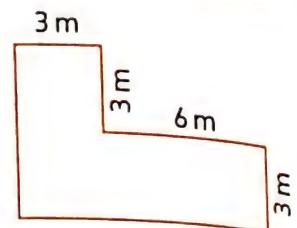
a. If the area of the opposite figure equals  $25 \text{ m}^2$ , then

the value of  $x$  is \_\_\_\_\_ m



b. The area of the opposite

figure equals \_\_\_\_\_  $\text{m}^2$



c. A rectangle with width 3 cm. if its length is 3 times the width, then the area of this rectangle = \_\_\_\_\_  $\text{cm}^2$

d. The perimeter of the rectangle = \_\_\_\_\_ + \_\_\_\_\_

e. The area of a rectangle with 8 cm long and 2 cm wide equals the area of a square of side length \_\_\_\_\_ cm

f. The side length of a square = its perimeter  $\div$  \_\_\_\_\_

**4. Match the cards that have the same results.**

a. The area of a square of side length 6 cm

1. 20 cm

b. The perimeter of a rectangle with 6 cm long and 4 cm wide

2.  $36 \text{ cm}^2$

c. The perimeter of a square of side length 10 cm

3.  $18 \text{ cm}^2$

d. The area of a rectangle with two dimensions 6 cm and 3 cm

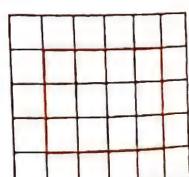
4. 40 cm

**5. A rectangle has a perimeter of 18 cm.**

Write down a possible pair of values for its length and width.

**6. Jasmine says the perimeter of this shape is 12 units.**

Explain her mistake.



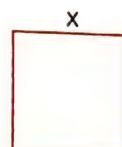
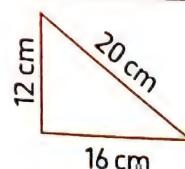
7. A rectangle has an area of  $12 \text{ cm}^2$

a. Draw three possible rectangles.

b. Find the perimeter of the three rectangles.

8. The triangle and square have the same perimeter.

Find  $x$

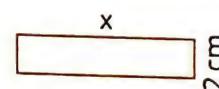
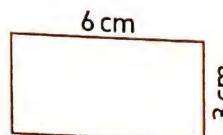


9. Fadil has a rectangular garden that is 5 meters wide and 4 times as long.

What is the area of Fadil's garden?

10. These two rectangles have the same area.

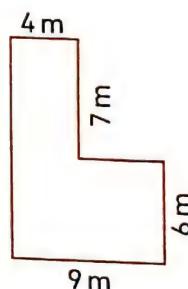
Find the length of the second rectangle.



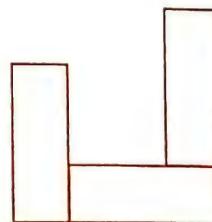
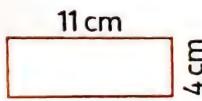
11. Wael wants to place a wooden fence around his vegetable garden.

Each meter of fencing costs L.E.10

Find the cost of the new fence.



12. Three rectangles have the same size are placed together to make the shape below.



Find the perimeter of the shape.

# Cumulative Assessments on UNIT 1

## Cumulative Assessment

**1**

On lesson 1 unit 1

**1.** Complete.

- The place value of the digit 4 in 24,681 is \_\_\_\_\_
- The value of the digit 7 in 730,566 is \_\_\_\_\_
- The largest number made up of the digits 6,5,2,0,9,1 is \_\_\_\_\_
- The number 1,280,035 has \_\_\_\_\_ digits.
- The largest 5-digit number is \_\_\_\_\_

**2.** Write each number in its appropriate column. Some may go in more than one column.

Sixteen	5	32,408	////
			Two thousands

Digit	Number	Numeral

**3.** Choose the correct answer.

- The smallest number made of the digits 3,8,4,2,7 is \_\_\_\_\_
 

A. 34,287	B. 42,378	C. 23,478	D. 87,432
-----------	-----------	-----------	-----------
- The value of 2 in 128,065 is \_\_\_\_\_
 

A. 20,000	B. 2,000	C. 200,000	D. 200
-----------	----------	------------	--------
- 87,621 < \_\_\_\_\_
 

A. 90,001	B. 87,619	C. 84,935	D. 78,621
-----------	-----------	-----------	-----------
- The largest number of the following is \_\_\_\_\_
 

A. 38,295	B. 703,067	C. 350,000	D. 17,824
-----------	------------	------------	-----------
- Which of the following digits makes the number sentence true  $52,4\blacksquare 1 > 52,461$  \_\_\_\_\_
 

A. 4	B. 5	C. 6	D. 7
------	------	------	------

Cumulative Assessment

2

Till lesson 2 unit 1

**1.** Choose the correct answer.

- a. Th digit \_\_\_\_\_ is in the ten Millions place in the numeral 346,870,251  
 A. 8      B. 0      C. 5      D. 4
- b. The value of the digit 3 in the number 23,694,501 is \_\_\_\_\_  
 A. 3,000      B. 30,000      C. 300,000      D. 3,000,000
- c. The value of the digit 4 in the number 42,780 is 10 times.  
 the value of the digit 4 in which number?  
 A. 146,703      B. 426,135      C. 34,651      D. 10,400
- d. \_\_\_\_\_ > 17,463  
 A. 16,643      B. 71,346      C. 17,364      D. 15,999

**2.** Complete.

- a. [7 ten thousands and 5 hundreds]  $\times 100$  = \_\_\_\_\_
- b. The number of hundreds in one million = \_\_\_\_\_
- c. The place value of the digit 0 in the number of 706,421,573 is \_\_\_\_\_
- d. 58,000 Thousands = \_\_\_\_\_ Millions.

**3.** Match.

- a. 4 milliards, 683 millions  
 17 thousands, 918
- b. The digit 5 is in the hundred  
 millions place in the number
- c. [9 millions and 5 thousands]  $\times 10$
- d. 386 millions

1. 38,600 ten thousands
2. 90,050,000
3. 4,683,017,918
4. 7,524,800,673

## Cumulative Assessment

3

Till lesson 3 unit 1

**1.** Choose the correct answer.

- a.  $5,000,000 + 40,000 + 8,000 + 700 + 20 + 3 =$  \_\_\_\_\_  
 A. 5,408,723      B. 5,048,723      C. 5,084,723      D. 5,048,273
- b.  $4,800,000 =$  \_\_\_\_\_ Thousands  
 A. 48      B. 480      C. 4,800      D. 480,000
- c. The number \_\_\_\_\_ has 9 digits.  
 A. 36,423,100      B. 8,614,000      C. 125,000,694      D. 167,282
- d. \_\_\_\_\_ is the compose of  $[6 \times 100,000] + [5 \times 10,000] + [3 \times 100] + [4 \times 10]$   
 A. 650,340      B. 605,340      C. 650,304      D. 650,034

**2.** Complete.

- a. 34 millions, 905 thousands, 421 in standard form is \_\_\_\_\_
- b. The value of 7 in the number 720,358,014 is \_\_\_\_\_
- c. The expanded form of 5,614,003 is \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_
- d. [4 thousands and 5 hundreds]  $\times 1,000 =$  \_\_\_\_\_

**3.** Complete the following.

Composed : \_\_\_\_\_

Decomposed : \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ +  $[2 \times 100,000] + [4 \times 1,000]$   
 $+ \text{_____} + [7 \times 10] + [5 \times 1]$ 

Millions			Thousands			Ones		
H	T	O	H	T	O	H	T	O
6	1	8	—	0	—	3	—	—

## Cumulative Assessment

4

Till lesson 4 unit 1

## 1. Compare. Write (&lt;, &gt; or =).

a.  $43,600,287$    $43,700,286$

b.  $1,534,973$    $900,000 + 90,000 + 4,000 + 300 + 6$

c. Seven millions, two hundred forty six thousands   $70,000,000$

d.  $[5 \times 10,000,000] + [7 \times 1,000,000] + [4 \times 100,000] + [2 \times 1,000] + [6 \times 100]$   1 miliard

## 2. Choose the correct answer.

a. 2,800 thousands &gt; \_\_\_\_\_

A. 2,800 hundreds

B. 28,000 hundreds

C. 28 millions

D. 2 milliards

b. The place value of 6 in 6,482,759,310 is \_\_\_\_\_

A. Millions

B. Ten Millions

C. Hundred Thousands

D. Milliards

c. The number 42,365,978 has \_\_\_\_\_ digits.

A. 10

B. 9

C. 8

D. 7

d. The missing digit such that  $8,185 > 8,\square 85$  is \_\_\_\_\_

A. 0

B. 1

C. 2

D. 3

3. Write a number in which the value of the digit 5 in the number 53,782 is 10 times the value of the digit 5 in your number. \_\_\_\_\_

4. Create a number that is smaller in the Ten Million place than 745,864,251. \_\_\_\_\_

5. Create a number that make the comparison true. Use all the lines.

---,---,--- &lt; 372,861,431



## Cumulative Assessment

5

Till lesson 5 unit 1

## 1. Choose the correct answer.

a. Which choice shows the numbers in an ascending order?

A.  $1. 700 + 50 + 7$

2. Seven hundred seventy-five

3. 765

4. Eight hundred five

B.  $1. 780$

2. Eight hundred forty

3.  $800 + 50 + 1$

4. one thousand

C.  $1. 572$

2.  $500 + 80 + 1$

3. Five hundred seventy-two

4.  $600 + 70 + 4$

D.  $1. Six\ hundred\ five$

2.  $600 + 50$

3. 674

4. Six hundred nine

b. Which digit makes the number sentence true?  $3,521,432 < 3,\underline{\quad},21,432$ 

A. 3

B. 4

C. 5

D. 6

c. Which number sentence is true?

A.  $74,562 < 9,856$

B.  $300,000 + 40 < 700,000 + 20$

C. million  $< 792,561$

D.  $482 > 7,914$

d. In the number 48,789 How many times greater is the digit in the Thousands place than the digit in the Tens place?

A. 10

B. 100

C. 1,000

D. 10,000

## 2. Write each of the following numerals in standard form and arrange in an ascending order.

•  $[5 \times 1,000,000,000] + [2 \times 10,000,000]$

+  $[5 \times 1,000] + [1 \times 10] + [8 \times 1]$

• Five Milliard, three million, fifty three

•  $5,000,000,000 + 4,000,000 + 6,000 + 9$

•  $525,000,508$

Standard form	Ascendingly

## 3. Complete.

a.  $[5 \text{ ten thousands and } 7 \text{ tens}] \times 100 = \underline{\quad}$

b. Six milliard, four hundred two million, twenty-eight in standard form is  $\underline{\quad}$ c. The value of the digit 4 in the number 3,456,261,852 is  $\underline{\quad}$ d.  $\underline{\quad}$  is 100 times greater than fifty thousand.

**Cumulative Assessment****6****Till lesson 6 unit 1**

- 1.** Use Front-End strategy to estimate each of the following.

a.  $89,562 \longrightarrow$  \_\_\_\_\_

b.  $9,000,000,000 + 7,000,000 + 900 \longrightarrow$  \_\_\_\_\_

c. Three milliard, five hundred thirty-two million  $\longrightarrow$  \_\_\_\_\_

d.  $[5 \times 1,000,000,000] + [8 \times 100,000,000] + [9 \times 1,000] + [8 \times 100] \longrightarrow$  \_\_\_\_\_

- 2.** Use place value strategy to round each of the following.

a.  $4,865 \approx$  \_\_\_\_\_ [to the nearest 100]

b.  $7,985,462 \approx$  \_\_\_\_\_ [to the nearest Hundred Thousand]

c.  $99,999,862 \approx$  \_\_\_\_\_ [to the nearest Million]

d.  $54,321,782 \approx$  \_\_\_\_\_ [to the nearest Ten Thousand]

- 3.** Choose the correct answer.

a.  $78,562 \quad 9,000 + 800 + 50 + 4$

A. >      B. <      C. =

b.  $740,000$  is \_\_\_\_\_ times more than  $7,400$

A. 10      B. 100      C. 1,000      D. 10,000

c. Which two numbers round to 700,000 when rounded to the nearest Hundred Thousand?

A. 706,999      B. 752,384      C. 799,999      D. 745,678      E. 789,653

d.  $870$  Hundreds = \_\_\_\_\_ Tens.

A. 87      B. 8,700      C. 87,000      D. 870,000

- 4.** Write 5 different numbers if rounded to the nearest hundred the result is 784,500

\_\_\_\_\_

- 5.** Complete.

Composed : 7,453,361,214

Decomposed : \_\_\_\_\_

## Cumulative Assessments on UNIT 2

### Cumulative Assessment

7

Till lesson 1 unit 2

**1.** Choose the correct answer.

- a. Fady wrote  $994 + 0 = 994$  using the \_\_\_\_\_ property.  
 A. additive identity      B. commutative      C. associative
- b.  $70,000,000 + 8,000 + 50 + 1$  \_\_\_\_\_ Seven million, twenty.  
 A.  $>$       B.  $<$       C.  $=$
- c. Which number round to 3,500,000 when rounded to the nearest Hundred Thousand ?  
 A. 3,562,531      B. 3,426,217      C. 3,524,261      D. 3,584,212
- d. The value of the digit 6 in the number 63,785 is 100 times the value of the digit 6 in which number?  
 A. 46,521      B. 94,682      C. 241,261      D. 432,216

**2.** Put (✓) to the correct answer and (✗) to the incorrect answer.

- a.  $35 - 14 = 14 - 35$  ( )
- b. The place value of the digit 4 in the number 5,862,431,811 is Hundred Thousand ( )
- c. The compose of number  $[7 \times 10,000] + [2 \times 1,000] + [4 \times 100]$  is 72,400 ( )
- d. The smallest 6- different digit number is 10,234 ( )

**3.** Solve each problem and name the property used.

- a.  $17 + 8 + 3$  \_\_\_\_\_
- b.  $35 + 14 + 15 + 36$  \_\_\_\_\_

**4.** How many times greater is the value of a number in the Ten Thousands place than the same number in the Ten place ?

## Cumulative Assessment

8

Till lesson 2 unit 2

**1.** Estimate to find the results use Front-End Estimation strategy. Show your steps.

a.  $123 + 79$  \_\_\_\_\_

b.  $813 - 141$  \_\_\_\_\_

**2.** Add or subtract mentally. Use compensation strategy. show your steps.

a.  $97 + 35$  \_\_\_\_\_

b.  $248 - 16$  \_\_\_\_\_

**3.** Add or subtract mentally. Use Break up and Bridge strategy, show your steps.

a.  $64 + 51$  \_\_\_\_\_

b.  $86 - 32$  \_\_\_\_\_

**4.** Complete.

a.  $38 + 7 = 7 + \underline{\quad}$  [ \_\_\_\_\_ property]

b. 4,325,021,310 in word form is \_\_\_\_\_

c.  $6,756,262 \approx 6,800,000$  [Rounded to the nearest \_\_\_\_\_ ]

d.  $73 + 1 + 99 = 73 + [1 + \underline{\quad}]$  [ \_\_\_\_\_ property] =  $73 + \underline{\quad} = \underline{\quad}$

**5.** Solve the problem and name the property you used  $142 + 55 + 18 + 45$

\_\_\_\_\_

**6.** In the numeral 1,256,789 what digit is in the

a. Hundreds place? \_\_\_\_\_

b. Ten Thousands place? \_\_\_\_\_

c. Millions place? \_\_\_\_\_

## Cumulative Assessment

9

Till lesson 3 unit 2

- 1.** Choose the correct answer.

- a. 24,000 is \_\_\_\_\_ times more than 2,400  
 A. 10      B. 100      C. 1,000      D. 10,000
- b. Which of these statement used only commutative property of addition to find  $17 + 48 + 13$ ?  
 A.  $[17 + 48] + 13$       B.  $17 + 13 + 48$       C.  $17 + [13 + 48]$       D.  $[17 + 13] + 48$
- c.  $58,000 =$  \_\_\_\_\_ tens.  
 A. 58,000      B. 5,800      C. 580      D. 58
- d.  $[3 \text{ hundreds and } 5 \text{ tens}] \times 100 =$  \_\_\_\_\_  
 A. 350      B. 3,500      C. 35,000      D. 350,000

- 2.** Estimate using rounding to the nearest 100. Find the exact answer.

a. 
$$\begin{array}{r} 35,462 \\ + 23,221 \\ \hline \end{array}$$

b. 
$$\begin{array}{r} 2,942 \\ + 350 \\ \hline \end{array}$$

c. 
$$\begin{array}{r} 94,641 \\ + 2,961 \\ \hline \end{array}$$

- 3.** Add or subtract mentally. Tell the strategy you used.

a.  $728 - 399 =$  \_\_\_\_\_

b.  $5,112 + 320 =$  \_\_\_\_\_

- 4.** In a week 3,573 tourists visited Giza pyramids and in the next week 4,230 tourists visited it. Find the number of tourists in the two week? [Round to the nearest Hundred]

- 5.** Arrange in a descending order, using the forms which the numbers are written.

- $[3 \times 1,000,000,000] + [5 \times 10,000,000] + [4 \times 10]$
- Three milliard, five hundred million, fourteen
- 3,000,786,562
- $3,000,000,000 + 20,000,000 + 400$

The order is : \_\_\_\_\_

- 1.** a. Solve  $852 - 465$  using counting down.

Using number line with decomposing strategy.



- b. Solve  $5,425 - 1,373$  using counting on.

Using number line with decomposing strategy.



- c. Solve the following problems, then round to the nearest Ten to check the reasonableness of your answer.

1.       $7,356$   
 $- 2,547$   


---

2.       $3,785$   
 $+ 2,816$   


---

- 2.** Write ( $<$ ,  $>$  or  $=$ ).

- |                    |                       |   |
|--------------------|-----------------------|---|
| a. $7,856,432$     | <input type="radio"/> | $7,000,000 + 80,000 + 6,000 + 900 + 80 + 9$ |
| b. $842 + 237$     | <input type="radio"/> | $3,225 - 2,784$                             |
| c. $7,423 + 8,612$ | <input type="radio"/> | $22,520 - 7,250$                            |
| d. 370 Hundreds    | <input type="radio"/> | 3,700 Tens                                  |

- 3.** A factory produced 2,879 toys in one week the next week, the factory produced 3,267 toys. Find the difference between the production in two weeks.

- 4.** Subtract mentally. Use counting (Add to subtract) strategy. Show your steps.

a.  $432 - 395$  \_\_\_\_\_

b.  $276 - 194$  \_\_\_\_\_

## Cumulative Assessment

11

Till lesson 5 unit 2

## 1. Solving equations with variable. create a bar model.

a.  $s - 74,252 = 23,402$

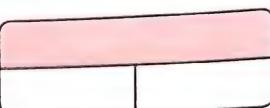
Bar model:



Solution:

b.  $b + 4,261 = 21,253$

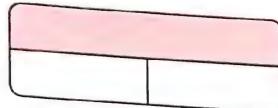
Bar model:



Solution:

c.  $47,261 - m = 31,422$

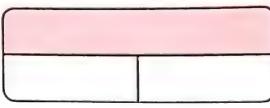
Bar model:



Solution:

d.  $45,261 + k = 52,428$

Bar model:



Solution:

## 2. Choose the correct answer.

a. [5 tens and 4 ones]  $\times 100 =$  \_\_\_\_\_

A. 54

B. 540

C. 5,400

D. 54,000

b. 35,000 is \_\_\_\_\_ times more than 350

A. 10

B. 100

C. 1,000

D. 10,000

c.  $[8 \times 1,000,000] + [7 \times 10,000] + [5 \times 100] + [6 \times 10]$  in standard form is \_\_\_\_\_

A. 87,560

B. 8,070,560

C. 8,700,560

D. 870,560

d. If  $x - 8 = 13$  then  $x =$  \_\_\_\_\_

A. 5

B. 4

C. 21

D. 22

## 3. Ant colony A has 32,425 male ants, if the colony has 74,319 ants. How many ants are female?

Bar model:



Solution:

## 4. Use the properties of addition to find the sum.

a.  $75 + 87 + 25 =$  \_\_\_\_\_

b.  $712 + 59 + 28 + 111 =$  \_\_\_\_\_

**1.** Complete the following.

- If  $b - 34,252 = 12,604$ , then  $b = \underline{\hspace{2cm}}$
- The value of the digit 4 in the number 4,851,061,052 is  $\underline{\hspace{2cm}}$
- 2,785,629,142 in expanded form is  $\underline{\hspace{2cm}}$
- $15 + 5 + 7 = [15 + 5] + \underline{\hspace{2cm}} (\underline{\hspace{2cm}} \text{ property}) = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
- $47,562 - 2,853 = \underline{\hspace{2cm}}$
- $\underline{\hspace{2cm}}$  is 10 times greater than three hundred.

**2.** Port Said has a population of 782,180 if South Sinai has a population 111,835 and North Sinai has a population of 450,528 How many more people do Port Said than South Sinai and North Sinai have combined ?

**3.** Add or subtract mentally. Tell the strategy you used.

- $112 - 78 = \underline{\hspace{2cm}}$
- $102 + 288 = \underline{\hspace{2cm}}$

**4.** Estimate using rounding to the nearest 100. Find the exact answer.

a. 
$$\begin{array}{r} 5,646 \\ - 2,389 \\ \hline \end{array}$$

b. 
$$\begin{array}{r} 72,861 \\ - 5,466 \\ \hline \end{array}$$

c. 
$$\begin{array}{r} 2,462 \\ + 1,391 \\ + 946 \\ \hline \end{array}$$

**5.** Write ( $<$ ,  $>$  or  $=$ ).

- $9,000,000 + 70,000 + 50 \bigcirc \text{ nine million, seven thousand, fifty-nine.}$
- $40,000 - 1,523 \bigcirc 37,456 + 2,652$
- $2,394 + 5,291 \bigcirc 12,006 - 4,321$
- The value of the digit 8 in the number 381,452,671  $\bigcirc$  The value of the digit 8 in the number 1,815,462

# First Month Assessments

## Model

1

1. Put (✓) to the correct answer and (✗) to the incorrect answer.

- The least 6 – digit number formed from 2, 8, 0, 5, 1, 4 is 201,458 ( )
- 57,000 is 100 times more than 570 ( )
- $7,865,462 > 985,947$  ( )
- If  $x + 11 = 20$ , then  $x = 9$  ( )
- $14 + 0 = 0$  ( )
- The place value of the digit 5 in the number 3,521,623,124 is Ten Million. ( )

2. Choose the correct answer.

- $[8 \text{ thousands and } 2 \text{ tens}] \times 100 =$  \_\_\_\_\_  
 A. 820      B. 8,200      C. 802,000      D. 820,000
- $873 + 27 = 27 + 873$  is used \_\_\_\_\_ property  
 A. additive identity      B. commutative      C. associative
- $3,000,000,000 + 500,000 + 70,000 + 40 + 8 =$  \_\_\_\_\_  
 A. 35,748      B. 3,000,570,048      C. 3,570,000,048      D. 3,000,057,048
- By using Front-End strategy  $8,784,251 \approx$  \_\_\_\_\_  
 A. 7,000,000      B. 8,000,000      C. 9,000,000      D. 10,000,000
- Which answer using rounding strategy to estimate  $482 - 211$ ?  
 A.  $500 - 200 = 300$       B.  $400 - 200 = 200$   
 C.  $400 - 100 = 300$       D.  $500 - 100 = 400$
- Seven million, three hundred thousand, fourteen > \_\_\_\_\_  
 A. 7,247,561      B. 7,908,562      C. 12,462,591      D. 432,563,291

**3. Complete the following.**

a. In the opposite bar model, the equation which you can form for it is \_\_\_\_\_, the value of  $x =$  \_\_\_\_\_

	43
$x$	17

b.  $8,625 - 438 =$  \_\_\_\_\_

c.  $785,000 =$  \_\_\_\_\_ hundreds

d. compose: 846,025,031, then decompose is \_\_\_\_\_

e. 4,312,601 in word form is \_\_\_\_\_

f.  $37 + 3 + 40 = [37 + 3] + 40$  ( \_\_\_\_\_ property) = \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

---

**4. Match.**

a. •  $7,452 + 2,931$

1. • Round off 3,642 to the nearest hundred

b. •  $8,355 - 287$

2. • eight thousand , sixty-eight

c. •  $1,039 + 2,561$

3. •  $3,600 + 42$

d. •  $[3 \times 1,000] + [6 \times 100]$   
 $+ [4 \times 10] + [2 \times 1]$

4. •  $10,000 + 300 + 80 + 3$

---

**5. Find the result mentally. Tell the strategy you used.**

a.  $102 - 43$  \_\_\_\_\_

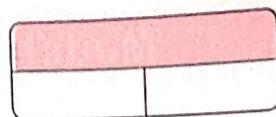
b.  $612 + 115$  \_\_\_\_\_

---

**6. Use properties of addition to find the answer  $842 + 32 + 58$**

7. Solve the equation, create a bar model

$$35,641 - Y = 22,268$$



8. Write five numbers that round to 25,000

\_\_\_\_\_

9. A factory produced 4,256 toys in one month.

If the factory produced the same number each month.

How many toys were produced in three months?

\_\_\_\_\_

10. Write a numeral that is greater than 5,341,621,800 and a numeral that is less than

5,341,621,800 and write the three numeral in a descending order.

\_\_\_\_\_

11. Use place value strategy to round each of the following.

a. 7,852 [to the nearest hundred] \_\_\_\_\_

b. 9,985,468 [to the nearest hundred thousand] \_\_\_\_\_

12. Write in standard form.

a. One milliard, fifteen \_\_\_\_\_

b.  $[5 \times 1,000,000] + [2 \times 1,000] + [4 \times 10]$  \_\_\_\_\_

**Model****2**

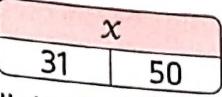
**1.** Put (✓) to the correct answer and (✗) to the incorrect answer.

- a.  $78,562 <$  seven hundred thousand, five hundred. ( )
- b. If  $x - 9 = 14$ , then  $x = 23$  ( )
- c. The place value of the digit 5 in the number 754,271,601 is hundred million. ( )
- d. 9,758 is estimated by front-end strategy is 10,000 ( )
- e. The largest 5-different digit number is 98,765 ( )
- f. 8,900 hundred = 890 tens. ( )

**2.** Choose the correct answer.

- a. In which place is the 5 has a value 100 times greater than the 5 in hundred place ?
  - A. Hundred
  - B. Thousand
  - C. Ten thousand
  - D. Hundred thousand
- b. [7 thousand and 4 ten]  $\times 10$  = \_\_\_\_\_
  - A. 7,040
  - B. 70,400
  - C. 74,000
  - D. 7,400
- c. The missing number to be  $7,856 < 7, \boxed{ } 56$  can be \_\_\_\_\_
  - A. 9
  - B. 8
  - C. 7
  - D. 6
- d. Which number rounded to 150,000 when rounded to the nearest ten thousand ?
  - A. 156,781
  - B. 158,986
  - C. 142,861
  - D. 149,125
- e. If  $m + 23 = 32$  then  $m =$  \_\_\_\_\_
  - A. 55
  - B. 60
  - C. 9
  - D. 7
- f. If  $0 + 8,321 = 8,321$  is using \_\_\_\_\_ property.
  - A. associative
  - B. commutative
  - C. additive identity

**3. Complete.**

- a. In the bar model,  the equation which you can form for it is \_\_\_\_\_
- b. The value of the digit 0 in the number 302,563,421 is \_\_\_\_\_
- c. \_\_\_\_\_ is 100 times greater than ten million.
- d. The number 2,643,891 is estimate to \_\_\_\_\_ by front-end strategy.
- e. Sixty-three million, seven hundred forty-one thousand, thirty four in standard form is \_\_\_\_\_
- f.  $2,227 - 181 =$  \_\_\_\_\_

**4. Match.**

a.  $[5 \times 10,000] + [6 \times 1,000] + [7 \times 10] + [2 \times 1]$

1.  $56,720$

b.  $53,158 + 3,562$

2.  $5,672$

c.  $8,458 - 2,786$

3.  $56,072$

d. 56,725 round to the nearest 10

4.  $56,730$

5. What is the number that is 1,000 times greater than 782 ?

6. Use properties of addition to find the result  $198 + 50 + 2$

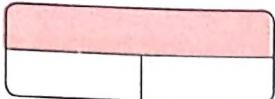
7. Write each of the following numerals in standard form and arrange in an ascending order.

- $[8 \times 1,000,000] + [5 \times 10,000] + [8 \times 100] + [9 \times 10]$
- Eight million, five hundred eighty thousand, nine
- One million, sixty-four thousand, nineteen
- 8,456,291

Standard form	Ascending order

8. The queen laid 142,350 eggs in 3 days.  
 If she laid 100,890 eggs in 2 days, how many eggs did she lay on day 3?

Bar model:



Equation:

Solution:

9. In the numeral 5,462,931 what digit is in the

a. Tens place \_\_\_\_\_

b. Ten thousand place \_\_\_\_\_

10. Find each result using mental math.

a.  $46 + 32$  \_\_\_\_\_b.  $93 - 38$  \_\_\_\_\_

11. In the number 745,376 how many times greater is the digit in the hundred thousands place than the digit in tens place?

12. Estimate using rounding to the nearest 1,000. Find the exact answer.

a.  $74,526$

$$\begin{array}{r} + 2,891 \\ \hline \end{array}$$

b.  $42,253$

$$\begin{array}{r} - 25,862 \\ \hline \end{array}$$